

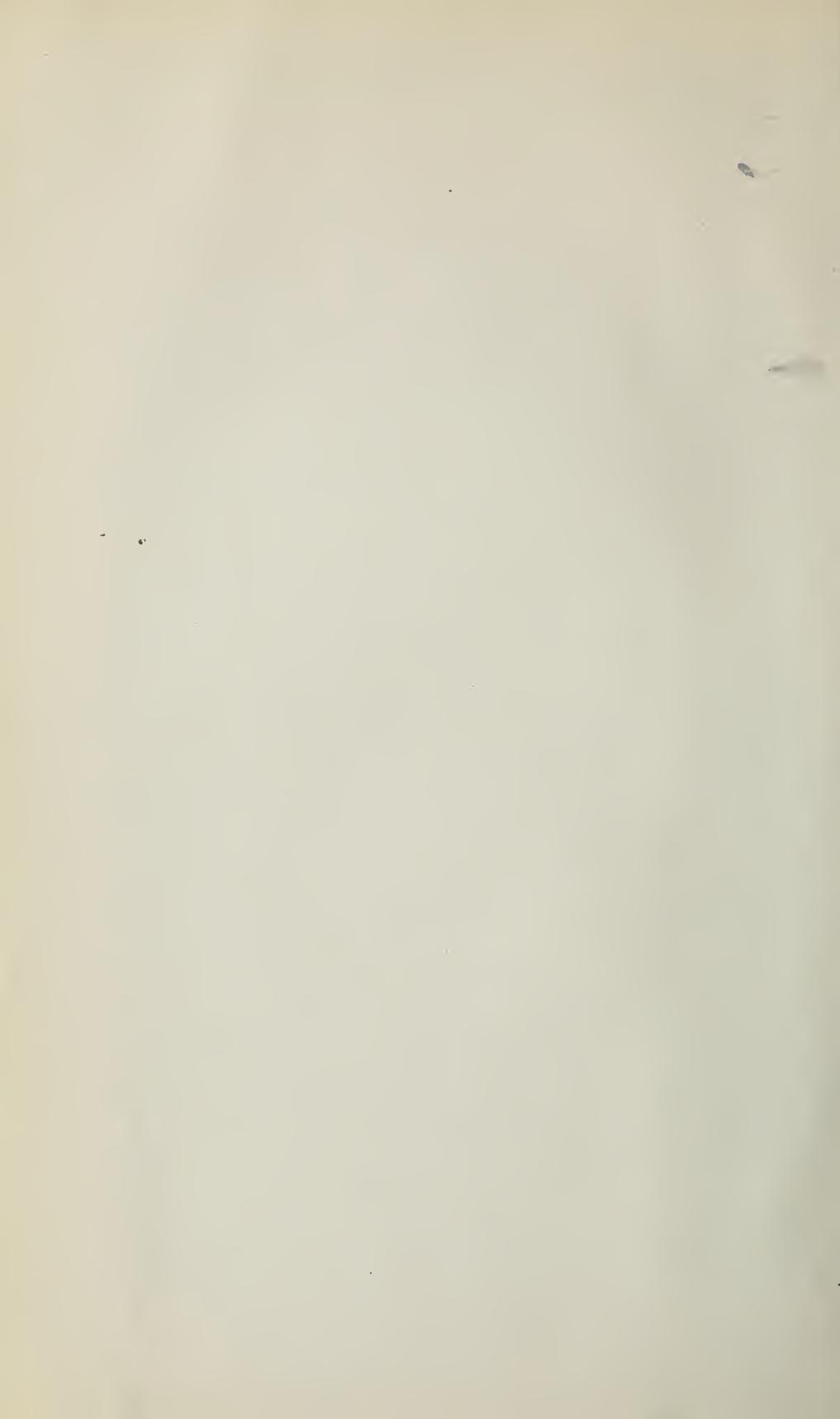
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Gleanings in Hive Culture



VOL. XLII. JAN. 1, 1914, NO. 1.

17c a Day

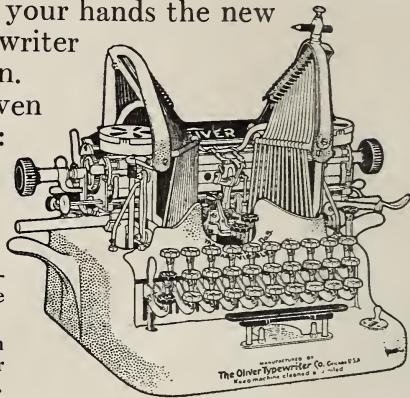
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A few dollars, plus your promise to pay the balance at the rate of 17 cents a day, places in your hands the new "Printype" model Oliver Typewriter No. 5, our very finest production. The best advice that can be given to the young man or woman is:

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This offer places at your command a machine that turns time, energy, and enterprise into the pure gold of success.

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"Falcon" Bee Supplies.

Take advantage of the early-order discount, send us your list of requirements, and we will quote you our very best factory prices and discounts.

Having recently constructed an eight-car-capacity kiln, and having enlarged our power plant, we shall be able to handle your orders to the best advantage.

"Falcon" Supplies speak for themselves. Don't delay your order, but take advantage of this opportunity and let us ship the goods at your convenience.

Send for our foundation samples and Red Catalog, postpaid.

W. T. Falconer Manufacturing Company, Falconer, New York

Where the good beehives come from

HONEY Bought Sold...

Central Ohio Honey Market

Finest quality WHITE - CLOVER honey a specialty. Producers who have not yet sold their crop should write. Those who have disposed of their crop and are in need of more for their trade, I shall be glad to supply at lowest prices consistent with highest quality and a fair margin of profit.

The correspondence of wholesale and retail dealers is especially solicited, as I am in position to furnish a grade of comb and extracted honey that will suit the most exacting trade. If interested, write for quotations and full description of the line.

Bee Supplies

Now is the best time to place your order for supplies for use next season. The prospect was never brighter, and there is every thing to gain and nothing to lose by ordering before the spring rush is on. Ask for revised price list and early-order discounts.

Root Quality and Peirce Service
from Ohio's Supply Center

E. W. Peirce, Zanesville, O.

Airdome Bldg., South Sixth St.

HOW FAR CAN A BEE SEE?

That question has been argued "time and again," but it doesn't worry me one-half so much as does another question—

How much can you see?

How many people there are to look, and how few there are to see and to think!

The best realms for good seeing are in nature.

The Guide to Nature

tells you how. . . It teaches people to see the wonders and beauties of nature.

\$1.00 per year. 10c a single copy.

Edward F. Bigelow, Editor,

The Agassiz Association, Inc.

ARCADIA :

Sound Beach, Connecticut



EARLY-ORDER DISCOUNTS WILL

Pay You to Buy Bee Supplies Now

29 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog and discounts today.

LEAHY MFG. CO., . 95 Sixth St., . Higginsville, Missouri

HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market prices at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

EASTERN GRADING RULES FOR COMB HONEY.

FANCY.—All sections well filled, combs straight, firmly attached to all four sides, the combs unsooled by travel-stain or otherwise, all the cells sealed except an occasional one, the outside surface of the wood well scraped of propolis.

A NO. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of the comb surface soiled, or the entire surface slightly soiled; the outside surface of the wood well scraped of propolis.

NO. 1.—All sections well filled except the row of cells next to the wood; combs straight; one-eighth part of the comb surface soiled, or the entire surface slightly soiled.

NO. 2.—Three-fourths of the total surface must be filled and sealed.

NO. 3.—Must weigh at least half as much as a full-weight section.

In addition to this the honey is to be classified according to color, using the terms white, amber, and dark; that is, there will be "Fancy white," "No. 1 dark," etc.

NEW HONEY-GRADING RULES ADOPTED BY THE COLORADO STATE BEEKEEPERS' ASSOCIATION,
DECEMBER 13, 1911.

FANCY WHITE.—Sections to be well filled, comb firmly attached to all sides and evenly capped, except the outside row next to the wood. Honey, combs, and cappings white, and not projecting beyond the wood; wood to be well cleaned; no section in this grade to weigh less than 13½ ounces.

NO. 1.—Sections to be well filled; combs firmly attached on all sides and evenly capped, except the outside row next to the wood. Honey white or very light amber; combs and cappings from white to slightly on color. Combs not projecting beyond the wood; wood to be well cleaned; no section in this grade to weigh less than 13½ ounces.

CHOICE.—Sections to be well filled; combs firmly attached; not projecting beyond the wood, and entirely capped, except the outside row next to the wood. Honey, comb, and cappings from white to amber, but not dark; wood to be well cleaned; no section in this grade to weigh less than 12 ounces.

NO. 2.—This grade is composed of sections that are entirely capped; except row next to wood, weighing from ten to twelve ounces or more, and have not

more than 50 uncapped cells all together, which must be filled. Combs and cappings from white to amber in color, but not dark; wood to be well cleaned.

EXTRACTED HONEY.—Must be thoroughly ripened, weigh 12 pounds per gallon. It must be well strained, and packed in new cans. It is classed as white, light amber, and amber.

STRAINED HONEY.—This is honey obtained from combs by all other means except the centrifugal extractors, and is classed as white, light amber, amber, and dark; it must be thoroughly ripened and well strained. It may be put up in cans that previously have contained honey.

BOSTON.—We quote fancy and No. 1 white comb, 16 to 17; white extracted, 10 to 11. Beeswax, 30. There is an active demand for white comb honey. Boston, Mass., Dec. 20. **BLAKE-LEE CO.**

INDIANAPOLIS.—Honey is now moving freely. Fancy white comb is selling at 16 to 17; No. 1 white, one cent less; finest extracted, 9 to 10 cts. in square five-gallon cans. Beeswax is in good demand, and producers are being paid 32 cts. in cash or trade. Indianapolis, Dec. 20. **WALTER S. PODUER..**

CINCINNATI.—The market on honey is quiet, with quite a supply. No demand for off grades of comb honey. No. 1 white sells from \$3.50 to \$3.65; light-9. Beeswax is selling at \$35.00 per 100. The above amber honey in cans, 8 to 8½; white honey in cans, are our selling prices, not what we are paying. Cincinnati, O., Dec. 19. **C. H. W. WEBER & CO.**

DENVER.—Our local market is well supplied with honey, and our jobbing quotations are as follows: Strictly No. 1 white, per case of 24 sections, \$2.70; choice, \$2.57; No. 2, \$2.43; extracted white, 8 to 9 cts.; light amber, 7 to 7½. We are in the market for beeswax, and pay 30 cts. per lb. in cash, and 32 in trade, delivered here.

THE COLORADO HONEY-PRODUCERS' ASSOCIATION,
Denver, Col., Dec. 20. **FRANK RAUCHFUSS, Mgr.**

CINCINNATI.—Fancy clover comb honey is selling for 16 cts., and white comb honey from \$3.50 to \$4.00 per case. Extracted honey is selling from 5½ to 7½ for amber, and from 7½ to 10 for white-clover extracted honey, according to quality and quantity. We are paying 32 cts., delivered here, for bright yellow beeswax.

THE FRED W. MUTH CO.
Cincinnati, Ohio, Dec. 16.

ZANESVILLE.—On account of the holiday season the demand for honey is somewhat more slack, though prices remain stationary. On comb, supply and demand are fairly well balanced; extracted is in rather light demand in comparison with offerings. Fancy white comb in small lots brings 19 to 20; No. 1, 18 to 19; best extracted in 60-lb. cans, 9½ to 11, according to quantity. Producers are paid for beeswax 30 cts. cash, 32 in trade.

Zanesville, Ohio, Dec. 22. **EDMUND W. FEIRCE.**

Honey reports continued on page 5.

We are in the Market for Both Extracted and Comb Honey

Would like to hear from those having Fancy and Number One Comb Honey. State best prices delivered Cincinnati. We want Extracted Honey, too. No lot too large or too small for us. We remit the very day shipment is received.

THE FRED W. MUTH CO.

204 WALNUT STREET

"The Busy Bee Men"

CINCINNATI, OHIO

P. S.—Ship us your old combs and let us render them for you. Our process extracts the last drop of wax from the slungum. We make money for you if you will ship us your old combs and cappings for rendering. Write for full particulars.

SPECIAL DELIVERY

During this month we shall double our usual efforts in points of delivery and service. We carry nothing but the Root make, which insures the best quality of every thing. We sell at factory prices, thereby insuring a uniform rate to every one. The saving on transportation charges from Cincinnati to points south of us will mean quite an item to beekeepers in this territory. We are so located that we can make immediate shipment of any order the day it is received.

Honey and Wax

If you haven't made arrangements for the disposition of your honey and wax for this season consult us. We buy both in large quantities, and can assure you of fair and courteous treatment, and a good price for your crop.

Shipping Cases

To sell your crop to the best advantage it must be well put up in attractive style. We have shipping cases that answer every requirement of looks and utility. Small producers who sell their crops locally will be interested in the cartons in which comb honey is put up to sell to the fancy customers at top-notch prices. We have honey-cans too, in cases for those who produce extracted honey. In fact, there isn't any thing we don't have that the beekeeper needs, either to produce his crop or help to sell it.

Early-order discount this month is 4 per cent.

C. H. W. Weber & Co.

2146 Central Avenue

Cincinnati, Ohio

Gleanings in Bee Culture

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Editor

A. I. ROOT
Editor Home Dept.

H. H. ROOT
Ass't Editor

J. T. CALVERT
Business Mgr.

Department Editors:—Dr. C. C. Miller, J. E. Crane, Louis H. Scholl, G. M. Doolittle, Wesley Foster, J. L. Byer, P. C. Chadwick.

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CHICAGO.—Prices on comb honey average about one cent per pound less than at this time in November. Just how much remains to be marketed is unknown. The probability is that sufficient quantities remain unsold to keep the markets well supplied. The extracted is not so firmly held, but prices have not receded much. Especially is this true of well-ripened white-clover or lasswood in new cans, which bring 8 to 9 cts. per pound. Beeswax sells at 31 to 33, according to color and cleanliness upon arrival. Chicago, Dec. 16. R. A. BURNETT & CO.

NEW YORK.—The demand for comb honey has slackened off to some extent of late; and while there is a call for white honey, fancy in particular, lower grades, mixed and buckwheat, are practically at a standstill. Our stocks, however, are not large, and will be disposed of in the course of time. We quote fancy white at 16 cts.; No. 1 at 14 to 15; No. 2 white, 12 to 13; buckwheat and mixed, 10 to 11. The market on extracted honey is quiet also; and while the stock of domestic grades is not very large, new crop from the West Indies is arriving in large quantities, and prices have been gradually declining. We quote white clover at 8 1/2 to 9; light amber, 7 1/2 to 8; buckwheat, 7 to 7 1/2; West Indian, 60 to 65 per gallon, according to quality. Beeswax is steady at 32 to 33.

New York, Dec. 18. HILDRETH & SEGELEN.

INCREASE Your SALES ... By a Liberal Distribution of Our Booklet ... THE USE OF HONEY IN COOKING

The 1913 edition is ready for distribution, and may be had in quantities at reasonable rates. The back cover page affords space for a display advertisement. As this booklet contains no advertising whatever, it can be employed with telling effect. Better order your supply early. Sample and prices in quantities on application. Fifty-eight pages; one hundred and twenty-two valuable recipes in which honey is used. Just the book for every household. A two-cent stamp will bring a copy.

Address the Publishers

THE A. I. ROOT COMPANY, MEDINA, OHIO

IF YOU USE

bee supplies you should have our catalog.
We sell the best No. 25 jar made.
Heavy cartons that protect honey.

I. J. STRINGHAM, 105 PARK PLACE, NEW YORK
Apriaries, Glen Cove, L. I.

The BEEKEEPERS' REVIEW

would like very much to enroll a goodly number of new subscribers for the year 1914. We are printing 400 extra sets of the REVIEW for the last half of 1913; and as long as they last they will be included free to all new paid-in-advance subscribers for 1914. All progressive beekeepers should subscribe for two or three good bee journals. We are making a special low price on the REVIEW when clubbed with other bee journals.

To take advantage of this low price, all remittances should be addressed —

Here is a { GLEANINGS, one year, \$1.00 } Both, one year, for \$1.50. good one: { The REVIEW, one year, \$1.00 }

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NORTHSTAR, MICHIGAN

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with
The SAVINGS
DEPOSIT BANK CO.
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The Bank that pays 4%**

Write for Information

A.T. SPITZER PRESIDENT	E.R. ROOT VICE-PRESIDENT	E.B. SPITZER CASHIER
ASSETS OVER ONE MILLION DOLLARS		

BEEKEEPERS, ATTENTION!

If you have any extracted or comb honey to offer, send us samples of quality; state quantities, and how packed. We pay the highest market price for the same. We are paying 31c cash for nice, bright, clean beeswax.

CHAS. ISRAEL & BROS., NEW YORK
486 Canal Street

The only Solution for Overstocking is OUT-APIARIES

Learn how to care for an out-apiary with the least amount of time and labor.

Our new edition of

"MANAGEMENT OF OUT-APIARIES" is ready for mailing. This is the new title of "A Year's Work in an Out-apiary," fully revised, and contains all of Mr. Doolittle's latest methods which he has employed this past season, securing an average yield per colony of 114 1/2 lbs. Price 50 cts. postpaid. Order now of the publishers.

The A. I. Root Co., Medina, O.

Gleanings in Bee Culture

DEVOTED TO HONEY, BEES, AND HOME INTERESTS.

A. L. BOYDEN, Advertising Manager.

Established 1873.

CIRCULATION 35,000.

Issued semi-monthly.

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SPACE RATES. To be used in one issue: Fourth-page, \$12.50; half-page, \$25.00; page, \$50.00.

Preferred position, inside pages, 30 per cent additional.

Preferred position, inside cover, 50 per cent additional.

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No medical or objectionable advertising accepted.

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Columns to page, 2 (regular magazine page).

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Living from a small cultivated area in
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On the Gulf Coast of Southern Florida

All the early vegetables, marketed at highest prices, are successfully grown—3 and 4 different crops per annum. A home in a delightful year-round climate. A young man paid \$125 for an acre of land this year, and spent another \$125 in clearing and cultivating it in tomatoes. The production was 550 baskets, which were sold at \$2.50 per basket; total gross production from a single crop on an acre of ground, \$1375. The same advantages and opportunities are open to you. Let us tell you in detail of the possibilities in this favored section. Ask for beautiful illustrated book, “Fruit and Vegetable Growing in Manatee County.”

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General Industrial Agent
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Hand and Foot Power
MACHINERY

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We also furnish
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**Know Before You Plant That Your Trees and
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Shrewd people buy merchandise from established houses—houses that will be in business when they need service. Why should not a planter buy his Trees, Shrubs, Vines, Roses, Bulbs, and Seeds with the same precaution? How disappointing it is, when your

trees or shrubs have leaved out, to find something you did not order—something you do not want. Have you ever had this experience? Don't take any risk when ordering. Buy direct of the producer and at first cost. We have a reputation at stake. Have been in business 60 years and expect to continue indefinitely. You always know where to find us. 46 greenhouses. 1200 acres.

192-page **FREE** Catalog **FREE** Write for it today. It's
interesting and valuable.



THE STORRS & HARRISON CO., Box 237, Painesville, Ohio

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... and ...

Popular Electricity and the World's Advance

Both a Full Year for Only **\$1.85**

To gain some idea of the range of interest and the scope of POPULAR ELECTRICITY AND THE WORLD'S ADVANCE, note this brief summary of contents.

MOTION PICTURE DEPARTMENT of the latest photo plays and stories with all the fascinating details of Motion Picture Production.

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128 Pages - 200 Subjects - 200 Illustrations

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GLEANINGS IN BEE CULTURE gives the most up-to-date methods in beekeeping in articles written by experienced beekeepers in addition to the regular departments—STRAY STRAWS, BEEKEEPING IN CALIFORNIA, NOTES FROM CANADA, BEEKEEPING AMONG THE ROCKIES, CONVERSATIONS WITH DOOLITTLE, BEEKEEPING IN THE SOUTHWEST, SIFTINGS, GENERAL CORRESPONDENCE, EDITORIAL DEPARTMENT, HOME DEPARTMENT, HEADS OF GRAIN FROM DIFFERENT FIELDS, and HIGH-PRESSURE GARDENING.

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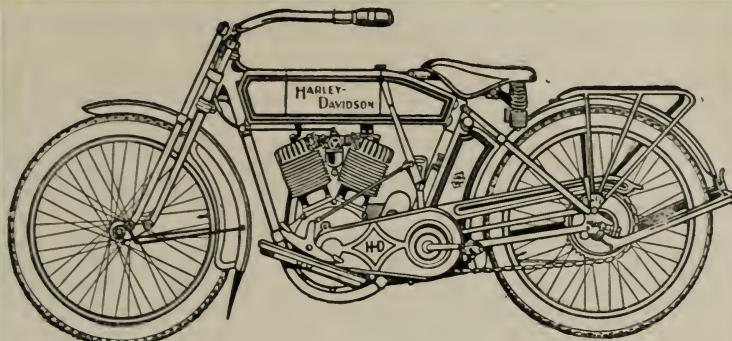
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BOTH FOR ONE YEAR AT CLUBBING RATE OF \$1.85.

Send Orders to

THE A. I. ROOT COMPANY, MEDINA, OHIO

Canadian postage 65c a year additional; foreign postage \$1.35 additional.



Startling, Exclusive Improvements Mark the 1914 Harley-Davidson

Step Starter Starts Machine With Rider in the Saddle and Both Wheels on the Ground

In case the rider accidentally stalls the motor in crowded traffic or on a steep hill it is no longer necessary to dismount, perhaps in the mud and find a level place to set the machine upon the stand in order to start the motor. Instead a downward push on either pedal—the step-starter does its work, and the motor begins again to throb.

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The new Harley-Davidson Band Brake (patented) can be operated either by a foot lever or by back pedaling on either pedal.

Folding Foot Boards

All models are equipped with Folding Foot Boards in addition to the regular pedals.

We will gladly send you on request our complete 1914 catalog giving full details of these and forty other improvements

Harley-Davidson Motor Co., 865 A Street, Milwaukee, Wis.
Producers of High-Grade Motorcycles for More Than Twelve Years

"If goods are wanted quick, send to Pouder."

This Bee-supply House is Twenty-five Years Old This Month

This advertising business is an interesting subject, and I have given it hard study for just twenty-five years. An expert advertising man of this city, Mr. Carl D. Spencer, has this to say in one of his announcements: "In September I canvassed over two hundred homes and asked questions. I learned this: That practically everybody reads advertisements; that nearly everybody doubts the truth of advertisements generally; that most people do not separate the true from the false, but discount what is said in all or nearly all of them; that almost every one has been tricked into spending money through false or misleading advertisements. They blame the business man and not the magazines because false advertising is permitted, and every one desires a means by which she or he may recognize a truthful advertisement."

The above interested me greatly, and I have been trying for a solution as to how to have my advertising identified as the genuine article. I have never overrated my class of goods. In bee supplies I simply say that the goods which I handle are the Root make, and that speaks volumes. I receive hundreds of testimonials from those who have dealt here, and these same friends are recommending my goods to their neighbors. In shipping large orders of bee supplies, there is a declining scale of prices on quantity lots, and I save this for my patrons, often unexpectedly to them, but gratefully received as a rebate. Frequently neighbors club together and secure their supplies in one shipment, thus creating a saving in the aggregate cost as well as in transportation charges. I should like to place my catalog of supplies in your hands, which shows the new schedule of prices, and gives list of discounts offered for early orders. I also include with each catalog a letter which I should like to have you read.

Just now I am advertising finest extracted honey by parcel post. I am mailing tight-seal cans containing four quarts, two quarts, and one quart, and also paper honey-jars filled with granulated honey. With these paper honey-jars one can peel off the waxed paper and leave a beautiful cone of white granulated honey to serve on the table, and I assure you that this has never been equaled in any confection. This is strong language; but if you receive a sample you will admit that my advertisement is not overdrawn. I have mailed these goods to Chicago, Cincinnati, Louisville, and to many small towns, without a failure thus far. Perhaps some of you would like one of these packages mailed to some of your friends as a Christmas souvenir. Can you think of a nicer, sweeter token? If interested let me mail you my descriptive circular with price list. I will also include price list of honey to be shipped in larger quantities.

Walter S. Pouder, Indianapolis, Ind.

873 Massachusetts Avenue

Wintering Bees

This is the title of a newly revised book by E. R. Root, going into full details on

Construction of Double-walled Hives

and in general

How to Winter Bees Outdoors

It will save many times its cost in one winter. . Price 10c.

Published by

The A. I. Root Co., Medina, Ohio



Established 1885

We carry an up-to-date line of
Beekeepers' Supplies

Write for our 64-page catalog free, and for lowest prices on supplies. Full information given to all inquiries. We handle THE A. I. ROOT CO.'S goods, and make prompt shipments; freight facilities good. Let us hear from you. . . Beeswax taken in exchange for supplies or cash.

JOHN NEBEL & SON SUPPLY CO.
High Hill, Montgomery Co., Mo.

"Griggs Saves Your Freight"

TOLEDO

"Griggs Saves Your Freight"

is the place all successful beemen have their eyes on now. Proof is the way orders are streaming in here from all over the United States.

Root's Shipping Cases for Honey

We are well supplied with shipping cases for your comb honey, all sizes and styles. Don't put a nice crop of honey in old musty dirty cases. Get new ones, and get the top price for your crop. . NEW 60-POUND CANS, two in a case, a specialty. . FIRST-CLASS ALCOHOL-BARRELS, the best package for extracted honey. We prefer barrels to cans if we get them early. Let us know what you have to offer in both COMB and EXTRACTED HONEY. We are in the market for any quantity.

Send in your BEESWAX and turn it into money. Sections and foundation sent out the day the order is received. If you are short, send to us. Quick deliveries are our pride.

S. J. GRIGGS & CO., - 26 NORTH ERIE STREET, - TOLEDO, OHIO.
"Griggs is always on the job."

Special Sale of Honey

WE HAVE produced a fine lot of extracted honey this season from our eight out-yards. In addition to our own honey, we have purchased many other lots from prominent producers, and are now able to offer for prompt shipment the following flavors of extracted honey:

ALFALFA,	PALMETTO,
SWEET CLOVER,	ORANGE,
WHITE CLOVER,	LIGHT AMBER,
ALSIKE CLOVER,	DARK AMBER,
BASSWOOD,	BUCKWHEAT.

We have some very fine lots of Ohio, Michigan, and Wisconsin WHITE-CLOVER COMB HONEY. For those who have not secured a good crop, and are wanting some fine lots for their trade, we can furnish them any desired quantity.

Write for our special prices.

The A. I. Root Company

Medina, Ohio

FRENCH'S

THE ORIGINAL POULTRY MUSTARD IN AMERICA

Write to us for information.
Booklet and circulars free.

THE R. T. FRENCH COMPANY, Mustard-Makers
ROCHESTER, N. Y. Department D.

PATENTS

25
YEARS'
PRACTICE

CHAS. J. WILLIAMSON, McLachlen Building, Corner
Tenth and G Sts., WASHINGTON, D. C.

Patent Practice in Patent
Office and Courts

Patent Counsel of
The A. I. Root Co.

New Goods Arriving!

We are getting our stock for next season, and should be glad to have your order for any supplies you are to use next year. A folder, with new prices, will be mailed you on request. . .

The A. I Root Co., Syracuse, N. Y.

Send for Our Prices on

BEE SWAX

We are paying higher prices than ever before at this season. WHY? Because of the tremendous demand for

Dadant's Foundation

Write at once. . . We will quote prices F. O. B. here or F. O. B. your station.

DADANT & SONS
HAMILTON, ILLINOIS.

Gleanings in Bee Culture

Published by The A. I. Root Co., Medina, O.

A. I. ROOT, Editor Home Department.

H. H. Root, Assistant Editor.

E. R. ROOT, Editor.

J. T. CALVERT, Business Mgr.

A. L. BOYDEN, Advertising Manager.

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NO. 1

Editorial

OUR cover picture for this issue shows the apiary and poultry-house of W. R. Bartlett, Elyria, Ohio, whose article appears on page 17.

WE hoped to give at least a brief report of the New York State convention in this issue; but at the last minute we found it would have to be left over till Jan. 15.

AN EXPLANATION.

SOME of our readers, after reading H. H. Root's article on imbedding wires in foundation, page 799, Nov. 15, got the idea that the wires in the frames are loose. They are not loose, but drawn taut in the frame in the ordinary way. When imbedding them in the foundation they are drawn out of alignment just enough to accomplish the result shown on page 802.

NO DEMAND FOR HONEY DURING THE HOLIDAY PERIOD.

As a general thing there is a slack time in the sale of honey during the holidays. The honey-salesman might just as well stay at home as to try to make sales during that time of the year. But he can begin again, perhaps, soon after Jan. 1. It is very necessary that he do so, because there is a large amount of honey yet to be sold before the 1914 crop comes on.

EDITOR OF "POULTRY LIFE" A BEEKEEPER.

THE breezy editor of that excellent poultry journal, *Poultry Life*, Mr. Miller Purvis, is a busy man and a bee-man too. We quote herewith the first part of one of his editorials in the October issue.

A PERSONAL WORD.

If any one thinks the editor of this magazine passes his days in elegant ease, wearing a tailor-made suit and a tall collar, it would be best to revise this mental picture. The editor of *Poultry Life* gets up in the morning and works all day about six days out of seven. Just at this writing he is finishing the task of digging three carloads of potatoes that he and one other raised this year. He also takes care of a rather sizeable flock of fowls, enough bees to make it interesting, and an orchard that is going to make him rich enough some day so that he can afford to throw his typewriter into an irrigation ditch, and

forget that he ever sat up nights spoiling white paper for the purpose of saying things to the public.

Here's long life and success to this fearless writer who is a poultry-man, fruit-man, and last, but not least, a bee-man as well.

A. I. ROOT ON THE SUBJECT OF WINTER NESTS.

IN this issue, page 6, our correspondent, Mr. Byer, believes that A. I. Root is not a supporter of the winter nest as advocated by his son in later years. He refers to page 863 of our issue for Nov. 1, where A. I. Root is mentioned as favoring combs of sealed stores of 15 lbs. each, placed in the center of the brood-nest. Apparently this might look as if he were in opposition to the practice advocated later in *GLEANINGS*; but if Mr. Byer will turn to the top of the next page, 864, he will see that A. I. R. recommended cutting circular holes in the combs near the top-bars for a passageway. This would also provide a winter nest, if we take into consideration the fact that A. I. R. has always been an advocate of putting the bees into winter quarters *early*. After all, if bees are given solid combs of stores early in the fall they will soon make a winter nest of the kind that we recommend in December when cold weather sets in.

THE IMPORTANCE OF UNIFORMITY IN MAKING MARKET QUOTATIONS.

OUR Colorado correspondent, Mr. Wesley Foster, on page 8 of this issue, calls attention to the lack of uniformity in the market quotations in the bee-journals. For instance, he says, "Some of the reports are from houses selling to retailers, some selling to wholesalers, and some, if not all, probably selling to both." He then goes on to give specific instances of how Cincinnati makes prices on honey going to retailers, and how Kansas City gives jobbing prices. If the producer does not know on what basis these quotations are made he is liable to be misled. We are addressing a circular letter to all those who quote prices, calling attention to this lack of uniformity, and asking if a more uniform scheme can not be adopted. In the mean time, it would be wise for any

beekeeper, before he consigns his honey, to secure prices by mail, based on sample or samples.

PRICES ON HONEY EASING UP AS A RESULT OF SOME HEAVY LATE SHIPMENTS.

WE have time and time urged the importance of selling honey, especially that in the comb, *early*. The latter should be sold, as far as possible, in the large jobbing centers in September and October—certainly before the holidays. After that time it is liable to granulate or break down during shipment, and, what is worse than all, car-load shipments of comb honey after January 1 often have to meet markets already overloaded with the product. The situation this year is not as good as it might be. Numerous carloads of honey have lately been coming from the West, and in some cases have been dumped on to markets already congested. If these same shipments could have been delivered two or three months earlier, when consumers are calling for new comb honey, better prices would have been secured. Too many times producers have gotten the impression that, by holding off, prices will become firmer. In a very few instances (and very few they are) delays have been to the advantage of the beekeeper; but such delays are always exceedingly dangerous, and usually there will be a slump in prices along toward or shortly following the holidays. It is difficult to get them back again, because buyers, fearing that their comb honey will granulate on their hands, will begin to cut prices.

While the situation is not quite the same with extracted honey, yet the market on liquid honey will generally ease up along about January.

This past year has seen an unusual production of clover honey, both comb and extracted; and had it not been for the shortness of the California crop, prices would have been completely demoralized. As it is, delayed shipments of Western comb honey, and extracted also, are being dumped on the Eastern markets, when they are in no condition to receive them. It is impossible to maintain prices under such conditions.

Another thing that has eased the market somewhat this season is the open winter we have been having. Buyers invariably claim that honey sells much better during a snug cold winter, and there is a reason for this. Carbohydrates (fats and sugars) are heat-producing. During cold weather our systems crave sweets. Neither candy nor honey sells during mild winters as they do in cold, hence it is not surprising that there has been less of a natural craving and demand for honey this winter.

One heavy clover year is not likely to follow another; and the probabilities are that prices will equalize another season. In the mean time a lot of comb honey now on the markets may become granulated, and granulated comb honey, if sold at all, must go at a big sacrifice.

EUROPEAN FOUL BROOD NOT THE TERROR IT ONCE WAS; HOW IT IS ELIMINATING BLACK BEES.

WE have lately been in districts where this disease has held sway for a few years back. But the foul-brood inspectors tell us that it is not as difficult to handle as it was formerly supposed to be. In the first place, it has been clearly demonstrated that a vigorous strain of Italians will hold it in check, and often cure it. Some even go so far as to say that where this strain is used exclusively there need be no fear that the disease will make any headway, and probably never get even a start. There are numerous instances where Italians are free from this disease, notwithstanding other yards of black bees within flying distance are rotten with it. Indeed, it is becoming increasingly apparent that European foul brood will ultimately clean out the black race entirely. It has already done so in many sections.

Another thing, the Alexander treatment, or a modification of it, is coming to be more and more thought of for treating European foul brood. While it fails in some cases, it is very clear that the shaking treatment fails quite as often with the same disease. In this connection one will do well to read an article on it by E. F. Bender, in the last issue, who only voices opinions concerning this disease that are beginning to be accepted in many parts of the United States.

Taking every thing into consideration, the up-to-date, progressive, careful beekeeper need not fear European foul brood providing he keeps a vigorous strain of Italians, and is otherwise careful to avoid infection by buying indiscriminate lots of bees. Indeed, we have heard that in some sections European foul brood has been a blessing in disguise in that it has eliminated entirely the careless, haphazard beekeepers who have always been a thorn in the flesh of the man who makes beekeeping a business. It is this don't-read-the-papers class who dump their honey on the market in all shapes and at prices that are ridiculously low.

In this connection it should be clearly understood that European foul brood is very different from the American type of the disease. While combs can be saved, many times, when treating European foul brood, there is no substantial proof yet

advanced to show that they can be saved when affected with American foul brood. While a vigorous strain of Italians is more immune to this disease, yet unless one exercises due precaution American foul brood can cause fearful havoc among them.

On the other hand, it may be said that the shaking treatment, if care is exercised, is generally efficacious in treating American foul brood.

BROOD-REARING IN ONE OF OUR BEE-CELLARS.

ELSEWHERE in this issue (page 27) we refer to certain experiments in giving bees hard candy as a winter food. Our Mr. Pritchard, who is looking after our bees in the cellar, reports (Dec. 27) that in the upper cellar (under the machine-shop) the bees are breeding very heavily. The temperature stands at about 52. There will doubtless be considerable increase in the strength of the colonies in this cellar. There are very few dead bees on the cellar bottom. The bees are quiet, but brood-rearing is going on at a lively pace. This is probably due to the fact that the moderate weather before the bees were put into the cellar, and the candy feeding, as explained elsewhere, had started brood-rearing outdoors. The disturbance incident to putting the bees in the cellar, and supplying them with hard dry candy, has stirred them up still more, with the result that brood-rearing is going on as heavily as ever, even in the cellar. Queens are laying, even in the colonies having nothing but natural stores.

It will be remembered that we had one yard of bees that we put in the cellar a year ago last December that was in poor condition. The colonies were weak, and we put them inside, as we felt sure they would die if left outdoors. We supplied some of them with hard candy; but those with candy and those without began to breed. The bumping on the sled in moving had stirred them up, so that the bees were clustered all over the front of the hives when they were placed in the cellar. Naturally one would think this would spell disaster—that the bees would never quiet down again, and that the result would be dysentery and death. But these bees began to rear brood, and *kept it up all winter*; and when we took them out in the spring they were strong colonies instead of being two and three frame nuclei as when they went in.

Well, now the same process is going on this winter in the upper cellar, for we just overhauled the bees and found brood in all stages in all the colonies, and here it is just the close of December. Brood-rearing may be going on in the other cellar, but we have not yet investigated to find out. More anon.

BEES AND POULTRY; THE COMBINATION OF THE TWO VS. EITHER ONE ALONE.

IN this issue will be found considerable matter from beekeepers who are also poultry-keepers, discussing the combination of bees and chickens, and the poultry business as a sole means of livelihood. Some interesting evidence is produced, showing that the combination of bees and poultry goes well together. When the work is most active among chickens in the winter and early spring, the bees are dormant, requiring little or no attention; and when the work is most pressing among the bees, in the late spring, summer, and fall, the conditions are such that the chickens can to a large extent find their own feed—especially so if they can have the range of a yard or a farm.

One fact has been brought out; and that is, that the average farmer can raise eggs and chickens for market cheaper than the man who makes the business a specialty. When chickens are confined in yards they must be fed regularly balanced rations, and this feed costs money. On the other hand, when the hens have the run of the barnyard, or the whole farm, in fact, they can find their own feed. The bugs and insects, many of them injurious, are numerous enough in the ground to make up an important part of their diet. Under such conditions the poultry business will yield comparatively large returns. It is during the warm part of the year that bees require most attention.

We know of numbers of people who run a small farm in connection with bees. On this farm they have a large number of chickens and 200 colonies of bees, say. The whole combination, especially if not remote from a good market, will yield good returns.

Apparently, from the testimony given in this issue, keeping more chickens is not as profitable as keeping more bees. There are hundreds and hundreds of beekeepers who have anywhere from 300 to 500 colonies, and not a few who have as many as a thousand or more. The fact that these men have been in the business, are staying in it, shows they are making a living; and if we may judge by the comfortable homes, by the automobiles and other home conveniences that some of these large honey-producers have, the business of honey production on a large scale is more profitable than the exclusive business of producing eggs for market in a large way.

Mr. J. E. Hand, on the other hand, a type of the other kind, is not only a successful beekeeper but a successful poultryman. He is running a combination of the two, year in and year out. While he deals with only

the poultry side in this issue the readers of this journal know him best as a beekeeper.

There is another phase of this whole question; and that is, the average backlotter can usually keep a dozen good hens in a small yard. The scraps from the table, especially meat scraps and ground bone, will go a long way toward the maintenance of the flock. If they can have all the cuttings from the lawn-mower from the front yard, they will get along very well, providing they have with the table scraps mixed grain which they should always be able to get during the daylight hours.

A small number of chickens in the back yard will yield not only a fair return but afford a large amount of pleasure to the good woman of the house; and last, but not least, eggs that she *knows* are fresh.

The prices that eggs are bringing now in market, especially during the winter months, and the securing of winter eggs when no one else has them, should be carefully considered. Ordinarily that means early chickens—much earlier than the average man will have them.

FOUL-BROOD QUARANTINE IN IMPERIAL CO., CAL.

In the early part of last year, as noted in GLEANINGS at the time and later, the supervisors of Imperial Co., Cal., passed an ordinance prohibiting the shipment of bees into the county from other counties of the State or other States, without first giving notice of such shipment within 24 hours after their arrival. This ordinance in case of violation places a penalty of fine and imprisonment, not only on the representatives of the railroads, but on the shipper himself. It appears to go further, in that it gives the foul-brood inspector authority to prevent the landing of bees (whether diseased or not) in the county from districts where disease of any kind is *supposed* to exist.

On Sept. 11 the foul-brood inspector, Mr. A. F. Wagner, in the exercise of authority given him by this ordinance, declared a quarantine against the shipment of any bees into the county. See GLEANINGS, Oct. 1st, p. 665. The inspector has evidently had his troubles. Two wagonloads and one carload of bees have been shipped in, and Inspector Wagner ordered the bees to be shipped back immediately. The railroad company demurred, but finally took them and carried them out of the county. Suits and counter suits for damages have been threatened. Whether they have been carried into court or settled, we have not been informed.

In the last issue of the *Western Honeybee*, published at Los Angeles, a full text of

the ordinance and quarantine is given. In an open letter to the Board of Supervisors of Imperial County, Mr. J. Edgar Ross, one of the most extensive beekeepers in the county, refers to this ordinance as "a gross injustice to the Imperial Valley immigrants." He says he has never brought bees into the county, and never expects to. Among other things he says:

The key to the entire situation is simple. A few extensive beekeepers now located in the valley wanted to put up a high board fence to keep others away from what they know to be a good thing. There might be some plausible excuse for this if the valley were, as they claim, already overstocked with bees. That this is not the case is abundantly proven by the rate at which nearly all beekeepers in the valley are increasing the number of their colonies. As a matter of cold fact, hundreds of tons of honey are going to waste in this valley for the simple reason that there are not enough bees to gather it. The interests of my pocketbook, as any one can plainly see, lies in silence, for I have bees for sale, and bees are worth three times as much here as they can be bought for on the coast; but I do not write my principles with a dollar-sign, and am decidedly opposed to this dog-in-the-manger policy.

Of course, GLEANINGS has taken no sides in this matter. Although we have been advised that trouble was brewing we thought best to say nothing about it, hoping that the case or cases would be settled out of court. We have received intimation that one case has been "settled," but on just what terms, and how, we are not as yet advised.

The situation, in a nutshell, resolves itself down to this: There is European and American foul brood in some counties of California. The beekeeping area in Imperial Co. is isolated inside of a desert; and under ordinary circumstances disease will not get into the valley unless shipped in with other bees. Its beekeepers, desiring to protect themselves from the importation of bees from infected counties into their county, apparently prevailed on the board of supervisors to pass the ordinance, which they did a year ago. But there seemed to be some dissatisfaction over the action of Inspector Wagner in enforcing the ordinance; that he was unfair in letting some in, and not others. As nearly as we can ascertain, some beekeepers and perhaps the majority in the county are in favor of the ordinance; but one of the most extensive ones among them, Mr. Ross, believes it is unjust and unfair, and he proceeds to pay his respects to Mr. Wagner (the inspector) and to his colleagues, in no uncertain language, in the *Western Honeybee* for December.

Mr. P. C. Chadwick, in his department in this issue (see page 7) appears to feel that the ordinance will act as a boomerang on the beekeepers of Imperial Co. if the time ever comes when they desire to move bees into some other county.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

HAPPY New Year!

HEY! Mr. Editor, you nearly argued me into painting hives. After reading Doolittle, p. 842, I'll let 'em stay unpainted.

I CLAIM only part credit for the 266 sections per colony, 1913. Most of the work was done by a woman—a hustler—Miss Emma W. Wilson.

C. F. BENDER'S article on European foul brood, p. 897, shows plainly he's been there. The most comforting item is that he has not seen a foul cell for three years, and yet he has kept his old combs.

L. S. EDISON, you ask, p. 864, whether to put frames of foundation in the center or side of the brood-chamber in April. You can do either; but the best place is to leave them in the shop till a month or two later.

A SPECIAL advantage of the motor-truck for out-apiaries is that your sympathies are not drawn upon as with horse flesh, when you want to hurry home without stopping to rest, or crowd two days driving into one.

LATELY a man told me that the bees in the middle of the cluster in his hives fanned lively to get up heat when too cold. Is that the orthodox belief? [That is certainly not the orthodox belief, and, what is more, we do not believe it is true.—Ed.]

A. I. ROOT, after reading what you say, p. 911, I feel proud to say that, with a single exception, I have found the toilet rooms of all the public institutions in Washington scrupulously neat and clean. Moreover, lavatories are furnished with hot and cold water, soap, and individual paper towels, entirely free.

J. E. CRANE has my thanks for something I never saw before—a piece of comb with worker-cells on one side, five to the inch, and drone-cells on the other side, four cells measuring $1\frac{1}{2}$ inches. A plain case, with no bend in the septum. [This is quite a remarkable case. Has any one else seen any thing like it?—Ed.]

YOU never can count on weather. At Medina you were caught Nov. 9 with hives 3 feet under snow. I was caught the other way. Nov. 11 I left home feeling that the bees were safe in the cellar; but immediately a warm spell turned up, such as never was known before, and I almost dread to learn what shape I'll find the bees in when I reach home Dec. 19.

IN *American Bee Journal* for 1861, 17 days is given as the time from the laying of

the egg to the emergence of the young queen. That was, I think, on the authority of Dzierzon and Berlepsch, and was, pretty surely, from rearing queens in not very strong nuclei. Later, 16 days was counted the time—3 days in the egg, 6 days feeding, and 7 days sealed up. I think those are the generally accepted figures to-day, and they are so given, *GLEANINGS*, p. 567. But Cowan, and later the A B C and X Y Z, reduced the days of feeding to 5, making the time from the egg to virgin 15. In order to learn something about it from the bees themselves I made some experiments, not with nuclei, but with a full force of bees. I got some positive results, although not very exact. In one case, instead of 9 days from the laying of the egg to sealing, it was not more than 7 days, 20 hours, 45 minutes, with a possibility of a good bit shorter time. (In the course of the years I have seen so many small larvæ in sealed cells that I am inclined to believe that cells are often sealed after four days of feeding or less. I suspect that the bees are not very particular about the time of sealing up; but at any time after an abundance of pap has been placed in the cell, whether the time be more or less, they say, "There, now, you little pig, you have more than you can cram down, and you may as well be sealed up now as any time.") In this case the full time from egg to virgin could not have been more than 4 hours over 15 days, with a possibility of being more than 4 hours under that time.

Aug. 5, 3:05 P. M., I gave a comb to my best queen, and after 2 hours gave it to queenless bees. Aug. 19 I put the 4 cells in a nursery. Aug. 20, at 1:05 P. M., no queen was out of its cell. At 3:05 one was out. At 5 no other was out, but another was out at 6:10. I did not look again till next morning at 5:15, when I found the remaining two were out. The longest possible time of that first queen was exactly 15 days, with a probability of 2 hours less, and a possibility of 4 hours less. The time of that second queen ranged from 55 minutes less than 15 days to 3 hours 5 minutes more than 15 days. The two remaining queens must have been at least a few minutes longer, but there's no telling how much longer.

Here's a chance for some of you ambitious youngsters to give us some more exact figures. Get your eggs laid within a shorter period than two hours, and then make more frequent observations than I did.

Notes from Canada

J. L. BYER, Mt. Joy, Ont.

I have just read with interest the plan of wintering given by A. I. Root many years ago, and referred to on page 863, Dec. 1, by L. M. Brown. While there must be some mistake in saying that the four combs the bees were to be wintered on must weigh about 15 pounds each, the fact, I see, is that A. I. R. seemingly did not place as much stress on the necessity of a "winter nest" as does a son of his at the present. If I am wrong in my understanding of the plan as given, please correct.

[See editorial in this issue.—ED.]

* * *

I understand that Dr. Miller has a crop for 1913 that averages over 260 sections per colony. Accept heartiest congratulations, doctor, for such a wonderful record. We thought that the crop was fair here in Ontario; but after that report we have come to the conclusion that we got only a taste of honey after all. However, there is no envy on the part of this scribbler; and to my mind such a crop means a combination of a wonderfully good honey-flow, wonderfully good bees, and last, but not least, *wonderfully good management*.

* * *

THE EFFECT OF THE WARM WEATHER.

"The mildest November on record" says the report of the observatory at Toronto in regard to the weather of Ontario during last month. No frost during the first week of December in our section; so this is another record. To-day, Dec. 8, it is colder, and we are having our first light fall of snow. How this continued mild fall weather will affect the bees is a question I have been asked frequently of late; and, frankly, I have no certain answer to give to the query. Most of the time it has not been warm enough for bees to fly much, and I am not fretting very much as to any bad results that may follow. At the Cashel apiary there may be an exception, as there the bees are surrounded on the north, east, and west by swamp; and during many of the November days a trip to the yard would show hundreds of bees sipping water from the bog, only a few feet from the bees. Bees carrying water freely generally means brood-rearing, and naturally I will watch with interest as to how these bees winter.

SNOW COVERING THE HIVES.

This matter of snow being left around the hives is a live question in all our northern locations where we are apt to get lots of the beautiful. Snow falling in "season" can pile up just as much as it likes, and I will leave it around or over the hives with no fear of bad results. But *my* hives all have quilts over the frames, and the outside cases have a space under the gable between packing and roof. If the bees had sealed covers on them instead of quilts I might have to be more careful of the snow; but I have no use for the sealed covers in our latitude, so the snow does not bother. As to falling in "season," I mean any time after the middle of December, and I want no deep snow over hives after late in March. That fall of snow you had in Medina was unseasonable, and I do not wonder that it threatened bad results if it had been left piled over the bees. After brood-rearing is well on in the spring it is very dangerous to allow hives to be covered any length of time, particularly if the old snow has been taken away and another fall of heavy wet snow should come and cover the hives to any great depth.

* * *

THAT WHITE HONEY IN ONTARIO.

See here, friend E. R., you are going to get into trouble for insinuating, p. 836, Dec. 1, that the water-white appearance of our clover honey is due to the admixture of thistle honey. I am told that thistle honey is very white; but I can give no positive proof personally, for the reason that I am not sure that I ever had any pure. While some sections that are poorly farmed may have enough thistles to make a slight showing in the surplus, such places are in the minority. In our home locations I think the editor could carry in a few armfuls all the thistles he could find in the alsike within reach of our bees, so you can see that thistles cut no figure in our case. Up at the Lovering yard there are more thistles; but the honey there is not as white as we get at home, owing to the presence of some other plants that do not grow in York Co.

By the way, I am informed that the editor took such a fancy to our Canadian honey that a policeman actually caught him with a bottle in his pocket—taken, presumably, from the honey exhibit we had at the big show. After an investigation he was let go on suspended sentence, owing to the nearness of the holiday season.

Beekeeping in California

P. C. CHADWICK, Redlands, Cal.

The *Western Honey Bee*, as edited by Mr. J. D. Bixby, is in keeping with the quality of work of the former editor, Mr. Geo. L. Emerson. Mr. Bixby will doubtless make himself fit into the position admirably, assuring the success of the journal, with proper support. There was no fault to find with Mr. Emerson, who, to the writer's personal knowledge, made a sacrifice in his own business to launch the journal successfully. Success to you, Bro. Bixby.

* * *

I quote the following from *Orchard and Farm*: "A carload of bees taken into Imperial County from San Diego County, in defiance of the quarantine on bees from that section, were ordered returned to the consignor." In the natural course of events there will be some beekeepers who will want to get out of Imperial County some day, and the task will be made no easier by the attitude they are now assuming. Self-protection gives every one a right to protect his own interests; and if these bees were diseased the action was right and proper. But the chances are they were not diseased or they would never have been shipped.

* * *

The year 1913 has closed, leaving a feeling of no particular regret to the beekeepers of California, especially those of the southern part of the State. It was a most disastrous season for the most of us. Some of the favored few in the orange district made a fair crop, but they were the exception and not the rule. In the alfalfa districts a fair to good crop was secured, the condition there being about normal. Disease has spread in some localities at a rapid rate, black brood (European foul brood) principally. This has added to the burden of some, as it has been a year in which fighting the disease has been very difficult, owing to the almost entire absence of fresh nectar. The rains have added a new hope to our future, so we hope and trust that the season of 1914 will bring new life and courage to our beemen, as well as financial gain. The writer wishes a prosperous new year to those who have stood by their bees, giving them all the attention consistent with their time and means.

* * *

So this is the "Bee and Poultry" issue. Well, I was never much of a "hen granny," and my success with chickens was never to

be bragged about. Once in my boyhood days I went out to set a hen on Friday. My mother told me I would have no success if I set her on that day of the week. Mother was not superstitious, but liked to have some fun with the boys once in a while. I went ahead and set the hen just the same. In about a week my mother came running down to the hen-house to see what was causing the commotion among the hens, and she arrived in time to see the last egg going after the hen that was set on Friday. She had a good laugh at my expense, saying, "I told you so." My answer was that a Leghorn hen did not have sense enough to sit, any way.

Let me tell you something of my wife's success with poultry, especially with turkeys on a city lot. There are many people who think a turkey must have at least 160 acres to run on. I once thought so; but Mrs. C. has proven to my satisfaction that I was mistaken. For the past three years she has kept a pair of these fowls for breeding purposes, allowing the hen to lay a full laying, then hatch and raise her own brood. This year she hatched 14, successfully raising ten of the brood, which is about as good results as one ever gets with turkeys. But she knows how to care for them, which is half the battle. Two or three days before time for the eggs to hatch, there is always a noticeable decrease in the amount of milk the family cow is furnishing the table. Oh, yes! clabber milk for the turkeys—no further arguments needed. The chief food they are given for several weeks is clabber cheese and green onion-tops cut fine and mixed with the clabber. My! how they grow if kept warm and dry! and the old mother hen knows how to do that.

But how about chickens? Mrs. Chadwick does well with them, but takes more interest in the turkeys. We keep only the White Plymouth Rocks, for the reason that we have an exceptionally fine laying strain of this breed, from which we get eggs the year round. There are other breeds of chickens that are good layers, but the objection with us has been to get a strain that not only lays well, but that is also of some value for the table. For a general all-round chicken, the breed and strain we have can not be excelled. Just the other day Mrs. C. sold three old hens for 20 cts. per pound, for which she received \$3.60. It is not so much the breed as the utility of the strain that is to be sought.

Beekeeping Among the Rockies

WESLEY FOSTER, Boulder, Col.

Wanted—a real good method of gathering sweet-clover seed. I fear the beemen are neglecting this plant when the seed is so valuable, and the bloom so fine for bees.

* * *

THE MARKET QUOTATIONS.

It has long been somewhat of a puzzle to me just how to interpret the honey quotations given in the bee journals. It seems they do not record very clearly the rise and fall of the honey market. This is easily explained by the different standards of grading used. For instance, a dark comb honey would sell for several cents a pound more in some markets than in others. Take the quotations given in GLEANINGS, Dec. 1, as an example. Some of the reports are from houses selling to retailers and some selling to wholesalers, and some, if not all, probably selling to both. Some of the jobbers sell to other jobbers who sell to wholesalers who sell to retailers who sell to consumers who eat the honey that the bees made!

The reports from Boston, Indianapolis, and Cincinnati are undoubtedly the quotations at which the honey is going to retailers. The Chicago report of Mr. Burnett shows conditions there very well. All sorts of prices have been asked and secured. Some consignment honey from the West having been sold very low, the market has been badly hurt. This price-cutting, I believe, has been done by houses that are not especially interested in building up the honey business.

The Kansas City report gives the jobbing price, the wholesale price ranging ten to twenty per cent higher than this. When I was in Kansas City the lowest price I was quoted on any No. 1 comb honey by the wholesale fruit-houses was \$3.35 a case; the highest I was quoted was \$3.75, which was about November 15. Kansas City was very heavily supplied with comb honey at that time, but it was moving out at a good rate.

The best price I see in all the quotations is 17 to 18 cents in a jobbing way at Zanesville, Ohio. The retailer must pay 20 to 21 cents wholesale for this honey, which is the highest I see in all the quotations.

Comb honey sells in Denver to the retailer at \$2.50 to \$3.00 a case of 24 sections, with some shading from this price where the beemen sell direct to retailers.

The St. Louis report gives the conditions about as I found them when I was there late in November. Wholesale fruit and produce

men in Kansas City handle considerable honey, while in St. Louis they do not handle it to speak of at all, leaving the honey business for the wholesale butter, egg, and cheese dealers and wholesalers who have less perishable produce than fruit.

* * *

POULTRY-RAISING IN TOWN DOES NOT PAY.

The writer's experience with poultry has not been very satisfactory. There are several causes for this: First, I am not situated so that feed can be bought as cheaply as it should. During October and November the feed bill was \$15.65, with only about six dozen eggs to show for it. Our flock averages about 170 eggs per hen per year, which, I am told by Mr. Vaplon, poultryman for the Colorado Agricultural College, is above the average.

We have been unable to dispose of all the eggs throughout the year direct to consumers, as should be the case. If I were on a small farm where I could let the hens run, I believe a flock of about a hundred hens would take care of the grocery bill. I have averaged about \$1.50 a year profit per hen, not figuring any thing for labor. Figuring labor at 20 cents an hour, the poultry has faced a deficit of about \$75 per year. I believe the city or town man can not profitably keep poultry on the meat and egg basis if he buys feed at market prices, sells his eggs at market prices, and figures his time at even starvation wages. I will have the poultry-men of our Agricultural College back of me, I believe, in this statement.

The place where chickens pay is where they can pick up half or more of their living—where they can run. The commercial poultry-plants succeed through getting above the market prices for eggs and selling fancy stock at high prices. There are very few successful commercial poultry-plants in the West, for the reason that they can not compete with the farmer's supply of poultry and eggs which is produced so economically. When I move to a farm I want a nice flock of chickens for profit; but in town I want them only to furnish a few eggs and a chicken occasionally for the table.

I hope this is not too hard on poultry-keeping, but I believe it fairly defines the limits of the business.

Conversations with Doolittle

At Borodino, New York

THE BEST BEES.

" You have been telling us different things about breeding, etc., but you have told us little if any thing about which kind of bees are best suited for different kinds of work. What I want to know is: whether all bees are alike suited for comb-honey production, extracted-honey production, or for the production of wax. If there is a difference, which are best suited for these different kinds of work? "

" I am well aware that volumes have been written on the subject of the best bees, each writer having his own ideas; but many do not have the matter fully settled in their own minds, even at the present time. Only recently one of our best apiarists told me that he was not fully persuaded that the Italians were better for any purpose than the blacks."

" But you do not think that there are many beekeepers who will agree that the blacks are as good as the Italians for any purpose? "

" There are two points in which the blacks excel, as I think is acknowledged by most of those who have experimented closely. The first is, they cap their section honey whiter than any others; second, they use more wax in doing such capping. And here you have an answer to working for the production of wax. It is doubtful, even at the present high prices of wax, whether it is as profitable to work for wax, under any circumstances, as it is for either comb or extracted honey; but if trying the experiment I would certainly choose black bees for such a test. At times of a good honey-flow, with little room for comb-building, these bees will plaster things over all about the hive with little bunches of wax, something similar to the way in which Caucasians will plaster up the entrance to their hives with a mixture of pollen and propolis."

" But how about extracted and comb honey production? "

" If I were producing comb honey altogether, I would procure a good queen of the golden variety, rearing all queens from her, and allow them to mate with any drones they might chance to meet, the most of which, without doubt, would be from an entirely different blood from themselves, which would give a direct cross. Such direct cross always gives the greatest vigor; and in reference to your question as regards the best bees for comb honey I should not

care one cent whether the young queens from such a mother mated with drones from black or hybrid stock, as all my experience goes to prove that thoroughbred golden Italian queens, mated to drones from either black or hybrid mothers, give bees equal to the very best for comb-honey production. But if I could conveniently hinder such mating I should prefer not to have these queens meet drones from young queens reared from imported mothers."

" How is that? Do not many of our best beekeepers claim that queens from imported stock give the very best honey-gatherers? "

" Yes, and undoubtedly such claim is absolutely true. It is not because they would not give bees just as vigorous and of just as good honey-gathering qualities; but for the reason that, as a rule, workers having such imported blood in them do not cap their honey nearly so nice and captivating to the eye as do those having more of the golden, hybrid, or German blood in their veins. There is no one thing that helps to dispose of a crop of section honey to so good advantage, nor so promptly, as do the nice white and smooth cappings of the combs. Have you never noticed that all fancy honey quotations are based on the looks of the cappings to the combs, and that honey quality takes second place in this matter? "

" That is right, now I come to think the matter over. But are not such bees as we have just been talking about the best for extracted honey also? "

" Well, hardly. They may gather just as much honey, but they use more of that honey in secreting wax, and wax production plays no important part in the production of extracted honey. Dark or leather-colored Italians, those nearly related to imported stock, often cap their honey with so thin a covering of wax, and that thin covering placed so close that it touches the honey, causing section honey to have such a greasy, watery appearance that it takes a grade much below fancy in the market, even with the same good quality as fancy in the combs. Now, while this is all against comb-honey production, it is in favor of extracted honey, for nice capping to the combs is never thought of in an apiary devoted to extracted honey; hence the less honey that is consumed for the secretion of wax, the greater yield of the extracted article. For this reason, were I working exclusively for extracted honey I would select the darker Italians,

Continued on page 34.

General Correspondence

COMMERCIAL EGG PRODUCTION

A Resume of the Business from the Question of Building to the Hatching and Feeding of the Chicks

BY J. E. HAND

From the dollar-and-cent point of view it is, perhaps, advisable for the expert bee-keeper to concentrate his capital and energies upon his chosen profession. There are conditions in human existence, however, that are infinitely more desirable than the mere making of money. "Variety is the spice of life;" and the human mind becomes broadened and invigorated by branching out upon different lines of thought and action.

Beekeeping is not a year-around occupation, hence a beekeeper on even a quite extensive scale may relax the tension upon his mind, broaden his views, and increase his finances, by branching out and taking on a side-line winter occupation. Among all rural industries, perhaps none is so well suited for this purpose as commercial egg production, since it is largely a winter occupation, though virtually an all-the-year avocation. While poultry-keeping alone is by no means the money-making bonanza or the highway to wealth that it is too often painted, yet with intelligent management it will give good returns for the capital and labor expended, including a reasonable profit. And you don't have to wait six months or a year for it; for after the plant is in operation, with proper care and attention to every detail commercial egg production will yield a daily and hourly income, rain or shine, summer and winter, with no off seasons.

You carry out the feed in the morning and bring in a basket of eggs at night to pay for it, including a profit commensurate with the investment, providing you attend strictly to every detail of your occupation. Born and reared on a farm, and familiar with every branch of rural husbandry, I know of no line where more skill is required, or where a little neglect is so quickly felt in the profits returned as in the poultry business; nor do I know of any that will yield as prompt returns for extra care. Let no one who may read this article delude himself with the idea that he can, without any previous experience or knowledge of the business, step into a profit-yielding business of commercial egg production on an extensive scale—a business where vastly more science and skill is required than in the production of fancy section honey and the control of swarming.

A beginner should start with 50 to 100 pullets, and increase his stock in proportion to his experience and ability. I emphasize these points because it is the purpose of this article to help beginners instead of leading them astray by painting the situation in roseate hues to foster hopes and ambitions that can be realized only upon the conditions herein mentioned. This does not necessarily imply a constant grind of ceaseless toil and arduous labor, but it does demand a constant supervision and strict attention to the most minute details of the business.

The first thing to be considered is the location and buildings. It is very desirable to have the ground sufficiently undulating to admit of ample surface drainage. A side hill sloping south has advantages along this line. If in an orchard, all the better for the poultry as well as for the trees, for the hens will scratch the ground and pick up innumerable injurious worms and insects, and in return for the favor the trees will provide protection for the fowls in winter and refreshing shade in summer, all of which are important factors. While the buildings need not be expensive, it is imperative that they conform to sanitary rules, as well as to conditions that favor winter egg production; for pure air and cleanliness means health to the fowls, and the healthy hen is the one to lay eggs in winter, when they bring the highest price, and we should assist her by imitating nature and making conditions as near normal as possible.

While we do not claim that the system herein outlined is superior to all others, we feel justified in recommending it in preference to any other for two reasons. First, it has been uniformly successful with us, and we are not sure that other methods would be. Second, it is practically the same system that is practiced by the leading poultry-men of the country, therefore we don't feel justified in confusing the beginner with a multitude of systems and innumerable visionary theories. So please don't consider it egotism that leads us to outline one particular system instead of branching out upon unexplored territory.

It is advisable to have the laying-houses in a continuous row, extending in a line east and west, and fronting south. This is imperative, since the warm and penetrating rays of the sun reflected through the windows dispel the gloom of an otherwise dull monotony, and bring happiness and content to the inmates, even in zero weather, as will be attested by their scratching and singing, likewise by a better filling of the egg-basket.

It should be not less than 16 ft. wide, and of sufficient length to house the number of hens desired, for no one has as yet placed a limit to the number that can be successfully operated in one continuous room unbroken by partitions. So long as correct sanitary conditions are rigidly maintained it is safe to assume that 1000 hens in one flock will give as good results as a flock of 100; and the minimizing of labor in caring for large flocks is an important item that swells the poultry-man's profits.

The building is sheeted outside, roof included, with matched lumber, and covered, except the front, with felt roofing, and treated to a coat of roofing tar; if tarred every two or three years the roof will last indefinitely. The inside, except the front, is ceiled with plaster-board, for which studs and rafters are correctly spaced. The rafters are 2 x 8 material to support the roof, without props. The floor is double boarded with light roofing felt between. The lower may be of cheap rough lumber; but the upper floor is a medium grade of matched flooring, thus making the room warm, and precluding the possibility of a draft of cold air to endanger the health of the inmates.

In the front, at intervals of 8 ft., is a single-sash window of 10 x 14 glass, sliding upward between studs, and protected inside by wire netting stapled to studs. At equal distances, between each pair of windows, is a door hung in two pieces to swing outward. The lower half is 32 x 42 inches, and the upper half 32 x 36 inches. Hinged at the top, swinging inward and upward, and hooked to the ceiling, is a netting-covered frame of equal dimensions with the upper door, so that, when it is opened, the screen is swung into position, preventing the exit of the inmates and admitting of ventilation by day. These doors are opened every morning, and closed at night during winter, regardless of weather conditions. As a further means of ventilation by night and day is an opening six inches wide next to the roof in front, and extending the whole length of the building. It is covered with burlap, and, being so high, changes the air without creating a draft over the heads of fowls at night, or forming any accumulation of frost or moisture on the ceiling. The floor is at least two feet from the ground, and well ventilated underneath to guard against moisture in the scratching-litter, and three feet would not be too much, as this is an important factor in sanitation; for moisture here means filth, which breeds disease.

During cold winter weather a light frame covered with muslin is tacked on to the upper door-screens, thus combining light and warmth with suitable ventilation. Next

to the north wall, and extending the whole length of the building, is the droppings-board, of a width to accommodate three lines of perches. These are in ten-foot sections, 16 in. above the droppings-board, and swing back against the ceiling. Under the droppings-board are the nests open to the hens from beneath and behind, and operating like the drawers of a work-bench. At intervals of 20 ft., intersecting the perches, is a short partition of equal width, extending from the droppings-board to the ceiling. This prevents the action of currents of air that would otherwise pass over the heads of the fowls at night with undesirable results. It will be noticed that the floor is free from encumbrance, and is virtually a mammoth scratching-room provided with perches and nests.

Impure air and filth breed disease; and a sick hen is neither a laying nor a paying hen; hence droppings should be removed daily, and dry fine sand sprinkled over the board. If kept dry the droppings are worth more per ton than the ordinary brands of commercial fertilizers.

STOCKING THE PLANT.

Next comes the stocking-up with early-hatched pullets, for these are the glory of the poultryman, and the winter egg-makers. This is the most complex problem of all, since it involves the rearing of hundreds of chicks by correct methods—methods that will produce strong healthy chicks; for a pullet with a weak constitution is an undesirable proposition. It is advisable to secure a sufficient number of yearling or two-year-old breeders of known health, vigor, and utility as egg-makers. This is imperative, for like produces like. Incubators were a success with us from the start, but it cost us dearly in dead chicks, wasted time, and money invested in artificial chick-killers under the cognomen of brooders. As *killers* they were all a howling success, and we carried the dead ones out by fives, by tens, by fifties, and by hundreds. "Experience is a good school, but the tuition is rather high" (Billings), for it cost us dearly to learn that the best brooder on earth is a gentle Wyandotte hen. She is well equipped with soft fluffy plumage, and will mother any thing from a jack-rabbit to a bull pup, and do it scientifically. We owned one that brooded four collie puppies until six weeks old. How is that for a brooder?

In practicing artificial methods with bees or poultry, our success will be conditional upon operating along lines that harmonize with the nature, habits, and instinct of the individual with whom we have to deal. While it is perfectly natural for full-grown fowls to congregate in large flocks, right the re-

verse is true in nature's method of rearing chicks. Instinct unerringly guides the acts of the prospective mother-hen in hiding her nest, and isolating her downy brood so long as they remain under her control. This is nature's method of rearing strong, vigorous, healthy chicks. While we may not improve upon her methods, we can imitate them so closely as to secure equally good results. Hence at the time of starting the incubators we secure a sufficient number of broody hens to mother the prospective hatch, and stock each nest with tested infertile eggs, treating each hen with louse powder twice, and anointing their heads with head-louse ointment before the chicks appear, otherwise the treatment will kill them also.

If chicks become chilled or overheated in an incubator after hatching they will dwindle and die in spite of the good offices of the mother-hen; therefore we must be on the spot when the hatch is due, and, when over, the door is propped open to allow sufficient change of air to prevent panting with open mouths, and not enough to cause the chicks to pile up for warmth. When conditions are right they will be spread evenly over the tray, sleeping quietly. I emphasize this point because a mistake or a little carelessness here will render all our labor and effort of no avail, since a chilled or scalded chick had better be dead so far as ultimate results are concerned. As fast as they get strong on their legs, place them under the hens at night, giving to each hen 35 chicks, making sure the hens are on a flat surface, otherwise the chicks will fall out and become chilled. The last batch removed will be the weaker of the hatch, and should be given to a gentle mother.

When three days old, begin feeding commercial chick-feed, soaking it in water for 20 minutes, and spreading it on a clean board. Feed sparingly four or five times a day for the first week on wet feed, giving no water nor grit. Begin feeding dry chick-feed and drinking-water the second week, but no grit until two weeks old, and then sparingly. The gizzard of a young chick is a very small organ; and if given access to fine sharp grit, chicks will fill their gizzards with it to the exclusion of life-sustaining food, and literally starve to death in the midst of plenty. The ignorant attendant, thinking to cure an imaginary distemper, dopes them with more grit and shells, with fatal results. When three weeks old the colony houses are isolated, and the chicks given a grass run, or fresh-grown oats, with chick-feed or cracked corn and wheat morning and night, having access also at all times to hoppers full of dry-mash food the same as given to laying hens. If these in-

structions are observed the result will be strong healthy chicks.

The chicks are hatched during April and May, and the colony houses should be of a size to accommodate the hen and her brood until they are full grown. Some of the pullets will begin laying in September, but should not be pushed for egg production until about November 1, when they are to be assembled within the winter laying-house, and not permitted to step outside until their year of egg production is completed and they are taken to market.

FEEDING FOR HIGH-PRESSURE EGG PRODUCTION

This is the most interesting stage of the program, and the enthusiastic attendant watches the rapid development of his pets and the reddening of their beautifully curved combs with bright anticipations of future success in the form of heaping baskets of beautiful eggs of snowy whiteness; and if he performs his part faithfully and intelligently his hopes will soon be realized. Next to the rearing of the chicks, this is undoubtedly the most critical part of the poultryman's experience; for the success of the whole venture depends upon the correct feeding of a scientifically balanced ration. A mistake here will result in a waste of expensive food material and a proportionate decrease in profits. Every feed contains a certain amount of necessary moisture varying from 8 to 90 per cent of its weight; hence the wisdom of supplying so-called dry-mash foods unmixed with water.

Since the hopper system of dry-mash feeding has been uniformly successful, and has economized labor to the extent of multiplying the number of hens that can be cared for by one man, and in one flock, it is not worth while to consider any other; and the subject of greatest importance is, how to compound the mash feed correctly. Space forbids a discussion of the composition of feed stuff and the nutrient value of different rations. Suffice it to say, it has been determined by carefully conducted experiments that the following ratio of mixing feed is second to none as an economical egg-making mash food: 100 lbs. corn meal, 100 lbs. ground oats, 100 lbs. gluten meal, 100 lbs. middlings, 300 lbs. bran, 100 lbs. beef scrap, 100 lbs. alfalfa meal. This compound should be kept constantly before the fowls in hoppers, while the morning and noon ration consists of a light feed of scratching material of mixed grains consisting of cracked corn, wheat, buckwheat, and millet. This is scattered in straw six inches deep, and the hens are literally compelled to scratch for every kernel of grain they get. At 4 o'clock P. M. they are given all the corn and wheat they will pick up in 20 min-



Apiary of J. H. Warner & Son, Middleburgh, N. Y.

utes, which causes more singing and scratching, and the hens will go to roost with a full crop, which is very desirable, because this is the proper time for the digestion of a grain ration, since it maintains a healthy action of the digestive organs during the night, keeping the blood warm and the fowl comfortable.

Economical feeding depends upon the amount of food digested rather than on the amount consumed, hence green vegetable food must be liberally supplied, preferably in the form of mangolds, cabbage, and fine-cut clover. Granulated charcoal, granulated bone, grit, and oyster-shells should also be

be tempered with hot water during extremely cold weather.

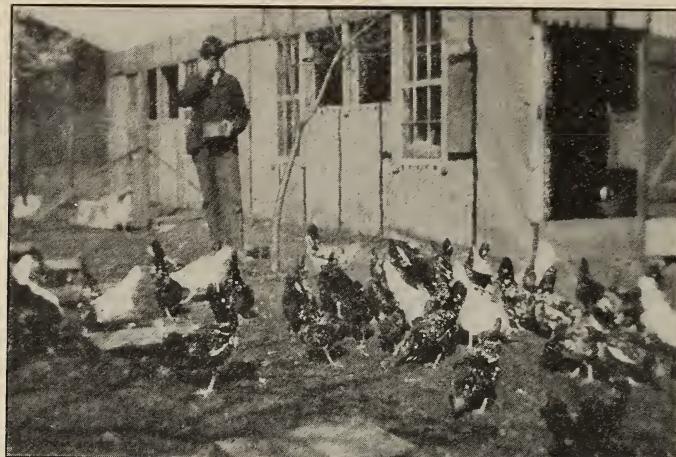
FEED-HOPPERS.

Manifold are the hoppers that do not hop, and legion is the name for those that hop so fast that an industrious hen will ingeniously hook the contents out upon the floor with her beak in search of choice bits that are always found in dry-mash feed; hence such feeds should be ground exceedingly fine. We overcame this waste of feed material by using a hopper that does not hop, but always remains wide open, and defies the most energetic hen to waste a morsel of its contents. Here it is: Make a



Warner's poultry and bee yard combined. The chickens have the run of the apiary, helping to keep the grass down.

kept constantly before the fowls in separate hoppers. It has been demonstrated that this system of feeding will maintain health and vital energy during a protracted period of high-pressure feeding. Fowls require more water in proportion to weight than other domestic animals; hence a liberal supply should be kept constantly before them, preferably in a large container fitted with a drip faucet regulated to the amount they will take without running over the trough, and should



One of J. H. Warner & Son's two poultry-houses accommodating 250 hens each.

light box with open top 30 inches square, 6 inches deep, mounted on legs 12 inches long; a loose-fitting frame, covered with inch-mesh netting, acts as a follower as long as the feed lasts, and the biddies soon become disgusted with hooking beak and toenails upon intervening wires in a vain attempt to explore its contents.

CHOOSING THE BREED.

We would not select a Percheron horse for a trotter, and for the same reason we should not select any of the general-utility breeds for exclusive egg production. While single individuals of these breeds may equal the best Leghorns as egg-producers, the fact remains that the Leghorns stand pre-eminent among all breeds as walking egg-machines; hence the name "Leghorn" is a synonym of efficiency and utility in egg-production. The white variety is conspicuous on account of her queenly form and graceful carriage, as well as her beautifully drooping crimson comb and the exceedingly large size of her snow-white eggs. Undoubtedly the Leghorn as a breed will stand high-pressure feeding for commercial egg production better than any other.

Birmingham, Ohio.

BEES AND POULTRY IN THE YEARS GONE BY

BY L. G. CARY
Poultry Judge

This subject will bring out some good articles, no doubt, written by those capable of writing interesting articles; but as for myself, I have had experience that, if I had talent to relate in an interesting and proper manner, I might have an article worth reading. However, it is plain talk that we like

to have, and facts that will do us some good.

I have been a poultry lover all my life, and can not remember the time I did not have my few thoroughbred birds. When a boy of eight years I owned some grand pit games and raised them for an uncle of mine who was a great fancier, and paid some fancy prices for them. He kept me in stock, and I certainly spent many a happy hour with my favorite birds. I almost lived with them, when I had time from running errands for my mother

or helping my father around the farm. Boys began helping earlier those days than they do now, it seems to me.

At the age of forty I can look back to those days of my childhood and readily understand why it is that I can not help raising poultry, and, furthermore, why I am interested in the production of thoroughbred birds. It seems to me I am a bigger crank than ever about all kinds of poultry. I will say that I have found my poultry work very pleasant, and, of course, interesting and also profitable.

I also remember back in those barefoot days, when I was taking my first lessons in poultry culture my father, who was very fond of honey (I might as well include myself in this fondness for honey) got the notion that he would raise some bees. At that time we knew little of the Italians or any particular breed of bees. We just thought bees were bees, and that was all there was to it, and that any kind of box was a hive. I do not remember where he got his first start, but I think he bought them at a sale. Anyhow, we had some bees, and in the spring more bees, as they swarmed often.

How well I remember what a turmoil there was on the little farm when the bees swarmed! My father and I out in the cornfield were startled to hear the dinner-bell begin to ring about nine in the morning; but we had no more than started for the house when we were assured that no greater calamity had happened than the bees swarming, as we could hear the din and rattle that mother and the other children were making to get the bees to settle. We thought if we would beat on tin pans and make a furious

noise of some kind it would cause the bees to settle.

The bee business did not pay big results. If we got enough honey for the table we thought we were doing well; for whenever we took honey we had to kill the bees with sulphur.

Poultry was not a very paying item of the farm then, as the birds were left to roost in the trees and in the wagonshed, on the fences—in fact, about wherever they took a notion to stop. Their feed consisted of whatever they could steal from the horses, hogs, or sheep. When very cold weather came, and a continued cold spell with snow for several weeks, my mother would issue orders that the chickens that were roosting out be caught and put in the hen-house; so when dusk came we began gathering them in. They were wild, and such a lot of squawking and squalling as we carried them to the hen-house and dumped them in at the door! They would keep right on squalling after we threw them in the house. It is not much wonder that we did not get eggs in the winter. When the warmer days of spring came, and the hens began to lay a few eggs, you may depend upon it we did not get any eggs to eat, for they had to go to the store to help buy our groceries; and from that time until cold weather again those abused and neglected hens would buy the most of the groceries for the table. In those days if the hens began to lay, then they would get better care; but when they shut off in laying, then the feed was stopped. Now we know better than that. We must give our poultry good care at all times; for when moulting time comes, and the egg supply slacks off, we must feed well to hurry through the moult so that, without loss of time, the hens will go to laying again.

What great improvements we have seen with bees as well as poultry! Then it would have seemed beyond reason to say that one swarm of bees would yield honey to the amount of 75 or 100 pounds during one season. It would likewise have seemed incredible to say that one hen would produce 200 eggs per year. All this has come to pass, and hens have been tested and known to lay more than 250 eggs per year. These hens are thoroughbred stock too. It does not pay to raise any other.

Bees have been improved, and the hives have been improved, until it is a science to raise and care for bees intelligently. The old box hive has given way to the new frame hive, and the few unprofitable swarms to the prosperous and paying apiary where pleasure, interest, and profit go hand in hand. Likewise the old log hen-house, with its mongrels, has given way to the well-ar-

ranged poultry-house with its number of thoroughbred birds, eggs in winter—profitable the year round. In the days of boyhood we got ten cents per dozen (often less) for eggs. Now we are selling fresh eggs at forty cents per dozen.

Bees and poultry go well together, and the successful poultry-breeder is very likely to be a successful beekeeper because he must be a person who looks into the details of his occupation and never tires of doing the little things that must be looked after to make success in both. A poultry-farm and bee-raising make a combination that, if looked after intelligently, and details and care given to every part, afford pleasure, health, and prosperity. A good location for poultry is a good location for bees; and one who loves the work of poultry-raising will find bees as interesting, if not more, and very profitable as well.

Trimble, Ohio.

POULTRY-RAISING AS A SIDE LINE WITH BEEKEEPING

BY ROSCOE F. WIXSON

It seems to be a noticeable fact that a number of prominent beekeepers in different parts of the country have adopted poultry as a valuable side issue to their business. On the other hand, there are a few who rely almost entirely upon the poultry as a means of livelihood, making the bee business wholly secondary, or not attempting to bother with it at all. In this section of the State the popular impression is that considerable ought to be made from chickens and comparatively nothing from bees.

I agree with the late E. W. Alexander, who said, "If you want a larger income, just add on one or two hundred more colonies." But in my case, with only a few colonies of bees and not many years' experience, I find it impracticable to increase too fast; and, accordingly, the fall and winter months leave me almost nothing to do with the bees. For several years I have kept a number of chickens, not only to take up the time but also as a means of profit.

The accompanying view of my home yard of bees shows also the two poultry-houses which stand a little to the left of the picture. The hives and the two houses are so closely placed together that it is a very easy matter to attend to the wants of each without going out of my way.

The White Leghorn seems to me the best all-around hen for steady egg production. In order to keep the stock up to perfection, I introduce pure stock every year. Some time ago I found that a hen kept the third



Apiary and poultry-house of Roscoe F. Wixson, conveniently located close together.

winter does not lay as well as a pullet or a year-old hen. Without the use of leg-bands I often had trouble in telling the older fowls. The hers are now so banded that no fowl is kept for the third winter. The bands are arranged in two sets of numbers, the bands on the pullets being all No. 1, while the year-olds are numbered 2. When the yearlings arrive at the two-year mark they are sold, and the bands changed to the pullets of that year's raising. The selling generally comes along in October, so they are somewhat over two years old when sold.

For feeding I follow the balanced ration given out by the experts at Cornell University. They consider 60 pounds of wheat, 60 pounds of corn, 30 pounds of oats, and 30 pounds of buckwheat mixed together an ideal feed for winter use. During the late fall and winter, ground bone and meat can be obtained at the markets. This food will induce hens to lay when all others fail. At this writing, November 28, it is impossible to procure the ground bone, so I am feeding meat scraps with good results.

In looking over the books for 1913 up to the present time, I find that the total number of eggs sold from 23 hens is 2495. In this amount no attention has been paid to the number used in the household during the year for cooking. The hens still have yet a month left to their credit before the year is up. At the present, the average yield per day amounts to about 9. Therefore for December they would have at least 270 more, which would bring a total of

2765, or an average of 120 eggs per hen for the year. If the total number used for cooking were known, quite a good showing could be made.

By also referring to the books, results show that the hens up to the present time have paid me a profit of 95 cents each. This does not take into consideration the value of 17 pullets, although the cost of raising them has been charged to the hens.

Ever since the spring of 1905 I have been interested in bees. Last season gave me some experience, and also a fair crop of honey from thirty colonies of bees, spring count. In the Aug. 1st issue, page 525, I told some of my experiences in regard to beekeeping, so I will give only a brief report of last season. The total number of sections of honey produced amounted to 1397. In addition to this I obtained about 500 pounds of extracted honey. On account of a number of colonies being reinfected with foul brood in the spring, there was an increase of only 11 colonies. When the season commenced, it never occurred to me that an extractor is a necessity in every bee-yard, especially when one increases by artificial methods. By July 1 I realized the great importance of a machine, and ordered one, but it did not arrive until the latter part of July, so I was able to procure the above amount only. I have no doubt that 1000 pounds of extracted honey could have been produced if the extractor had been in the yard the entire season.

There is considerable profit and pleasure



FIG. 1.—General view of W. R. Bartlett's apiary and poultry plant, located in a young orchard. A similar view is shown on the cover for this issue.

both in poultry-raising and in beekeeping. Both of these pursuits require patience and perseverance; so success in many cases depends entirely on the man. It is my plan to keep on raising a few chickens as long as they do not interfere and bother me in apiary work.

Dundee, N. Y.

1500 CHICKENS AND 50 COLONIES OF BEES

Why the Two Lines Go Well Together ; Specializing in the Production of Sterile Eggs

BY W. R. BARTLETT

The combination of bees, poultry, and, I might add, an orchard, is an ideal one. We have two acres of land in a young orchard, and here we have the bees and poultry. A good growth of elderberry bushes and small trees on the south, east, and west lines of the lot, and the poultry-buildings on the north, furnish a good windbreak. We have from 1000 to 1500 chickens and 50 colonies of bees.

As we hatch all our chickens with incubators we are enabled to produce eggs and broilers (cockerels) when the prices are the highest. We feed the newly hatched chicks nothing for the first 48 hours, after which one of the commercial chick-foods is given every two hours for the first four or five days, gradually reducing the feeding to morning, noon, and night.

The brooder house, one room 28 x 16, is divided into pens by poultry wire, and a lamp-heated movable hover is placed in each pen of 100 chicks. This admits plenty of pure air, gives scratching-space, and insures perfectly sanitary conditions.

Grit, oyster-shells, and charcoal are continually before all fowls. The morning and evening meals for the fowls of all ages consist of mixed grains thrown into the litter. A dry mash, fed in troughs, is given at noon. Green food is fed to all at nine in the forenoon.

At the age of six weeks the chicks are placed in the colony houses and given the free range of the orchard. About Oct. 1 the pullets are moved to the large winter houses. The males are put with the two-year-old layers during the breeding season only—from January 1 to June 1. The pullets are kept for laying entirely, as we make a specialty of sterile eggs for table use. We have a special trade in Cleveland, where there is a growing demand for sterile eggs.

We have not been in the bee business as long as we have in the poultry business; but we find business methods apply to the bees as well as to the poultry. A complete system of accounting is maintained. The hives are placed in rows, each one in the shade of a tree. Each hive bears a tin tag on which is painted the row letter, and hive number, enabling one to locate any hive immediately.



FIG. 2.—One of Mr. Bartlett's poultry-houses at close range.

In the management of bees and poultry, every man, as he gathers experience, adopts methods peculiar to his own needs and conditions. We have found that it is the best policy to have all hives and parts uniform and interchangeable; and we therefore purchase all our supplies from one reliable manufacturer, which saves much time and labor.

We operate principally for comb honey. In order to check swarming somewhat we believe in plenty of hive room and ventilation. In the spring all queens are clipped.

We find the smoking plan of introducing queens one of the best.

There are several devices which have proven to be very convenient, among which is a frame the size of a hive covered with wire cloth, which, when placed over the top of the frames, prevents the bees from flying out and robber bees from getting in when the cover of the hive is off. At the same time, one is able to see what is going on in the hive. When a hive is being robbed we find a wire-cloth box, large enough to telescope over the entire hive, very effectual.

Early in the fall all colonies that are short of stores are fed a sufficient amount of syrup, so that none have less than 25 lbs. for winter. Weak colonies are united by placing one hive on top of the other, with a screen between them for three or four days.

Our bees winter on their summer stands, and are protected with chaff cushions in a super on top (grain-bags, one on each side), together with an outer covering of roofing paper securely tied with a heavy cord.

There are many reasons why the bee and poultry businesses work together advantageously. Each business has its own busy season. The incubating and brooding of chickens is practically over before the busy season with the bees begins. Another advantage of the combination is that the same land can be utilized for both. Besides this, poultry fertilizes the land, bees fertilize the fruit, and the fruit-blossoms furnish the bees with nectar.

Our idea is to have a good laying strain of White Leghorns, a good laying strain of Italians, and to "keep on the job."

North Ridgeville, Ohio.

A BEE AND POULTRY PARTNERSHIP

BY RUTH C. GIFFORD

My mother and I are in the poultry and bee business in partnership. The days I am busy with the bees she takes entire charge of the poultry. We have struck some "bumps" with the bees, but more with the poultry. So the things that follow in this article are from plain hard experience.

For several years our troubles started a few days after the first chicks were hatched, and, in spite of all our care, we seldom raised half of them. Some died with the white diarrhea, and others just dried up until they looked like bumble-bees, and fell over dead. Then we decided to change the feed and the method of management. Since that time we have seldom had a sick chick. With this method we give the chicks luke-warm water and grit when they are 40 hours

old. Two hours later we give them a little bit of fine oatmeal. This is given them every three or four hours for three days. After that we use a good chick-feed of mixed grains. We usually buy this by the hundred pounds direct from some poultry-supply house, because we find that by so doing we can save about a cent a pound. When the chicks are a week or ten days old we start to give, once a day, a level teaspoonful of commercial beef serap and fine bone for every twenty chicks. We feed often, but give a *very small quantity* at a time. All the feed is scattered in straw or hay-heads, and the chicks have to scratch for it. When they are about a month old we add wheat and cracked corn to their ration, and give them all they want to eat. We never give chicks any kind of ground feed.

Next the gapes started among the chicks. We finally settled on the old-fashioned horse-hair method to remedy that. We could not always make it work, though, until some kind neighbor told us to catch a small string behind the two little hooks on the back part of the chicks' tongues, and to hold on to the ends of the string with the thumb and first finger of the left hand. This prevented the chicks from jerking in their tongues and sending the hair down their throats instead of their windpipes. If the little loop in the hair is dipped in turpentine the worms let go much easier. We never send the horse-hair down their windpipes more than three times. Then we let them sleep in a basket for several hours, and after that try again if they are still gaping. However, we usually find that they have all stopped.

Our chicks had lice, too; but we never even touched them to look for lice until they



FIG. 3.—Mr. Bartlett's method of preparing hives for winter. A super is placed over the brood-chamber containing a chaff cushion held away from the top-bars by means of a Hill device. The super-cover is then put on, and the whole hive wrapped in a heavy grade of black enameled felt. The regular hive-cover is put on top, and the whole tied together. Lastly the paper-cover shade-board is put on and weighted down.

were ten days old. Then we poured a mixture of four parts of coal-oil and one part of crude carbolic acid over the bottoms of the coops, and that night picked the headlice off their heads. This is not pleasant work; but chicks can't live with lice boring into their brains. We waited until they were ten days old, because then the handling does not weaken them, and we did it at night because they were sleepy and did not make a fuss.

When the chickens weigh about three pounds we select the pullets we want to keep for laying. As our chickens are Plymouth Rocks we have to try to guard against the type that gets overfat. We select the active, bright-eyed pullets that have medium-large combs, broad breasts, and are wide

between the pelvic bones. Even after this care we seldom risk keeping them over two years. In order to tell which are the two-year-old hens, we place hog-rings on the left legs of the pullets one year, and on the right legs of the pullets the next year. Then we sell the hens in June and July after their second winter. We like the hog-rings because they are easy to use and so cheap that we don't have to bother removing them when we sell the hens.

North East, Md.

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BEEKEEPING, POULTRY-RAISING, AND GARDENING

BY C. H. GEBHARDT

On Nov. 1, 1912, I housed 18 yearlings, 25 pullets, and three cockerels of the White Wyandotte strain. After having tried many other breeds I think that the Wyandottes are the best all-around breed for every purpose. I had White Leghorns once, and could get a few dozen eggs more per year; but for broilers they are of no use; and in the fall, when one wants to sell the old hens, their carcasses will bring hardly any thing, while White Wyandottes make the finest broilers, and the old hens weigh from 7 to 8 lbs. They are good layers and good moth-



FIG. 1.—C. H. Gebhardt, Lake Geneva, Wis., and his White Wyandottes.

ers, while Leghorns are non-sitters; and if one wants to raise Leghorns he can not find enough sitters, so he must keep a few of some other breed for sitters or use incubators, which will not pay for a man with small means.

I feed my laying hens a mash composed of equal parts of bran, corn meal, ground oats, chopped alfalfa, and 1 lb. of beef scraps, keeping plenty of oyster-shells, grits, charcoal, and fresh water before them all the time. At noon I give them a few handfuls of wheat in their litter to keep them busy scratching. In the evening I feed them equal part (my own mixture) of wheat, cracked corn, and oats.



FIG. 2.—Mr. Gebhardt in his apiary, Lake Geneva, Wis.

I paint the perches every week with kerosene and carbolic acid, and powder the nests every week with Persian insect-powder. Once a month I change the nest material, also the litters out of the scratching-pens. For the laying hens I have a room 10 x 12 feet next to my horse-stable, so it is nice and warm. The scratching-pens, as can be seen at the extreme left of Fig. 1, are made out of old hot-bed sash 10 x 12 feet. The yard is 20 x 50 long, and in summer the chickens have free range.

My wife takes care of all the young chickens, hatching them under hens. All this we do in our spare time, as I must attend to my garden from 7 A. M. to 5 P. M. The bees I attend to mostly alone in summer.

Sometimes I took comb honey out at 3 A. M. as the bees were quiet, and it was not so hot as in the bright sun, and at 7 A. M. I was through. The extracting of honey and grading of sections we did evenings. You see if a man is ambitious he can do a good deal.

Lake Geneva, Wis.



BEES AND POULTRY FOR ELDERLY PEOPLE

Chicks Eating Drones

BY H. H. SNOWBERGER

My wife and I, now both past 75 years of age, jointly own three acres of ground, and have for years kept bees and chickens in the same lot. We have been quite successful. While I do the work with the bees, and feed the old chickens, the care of the young chicks falls mostly to her during swarming time, and until the honey-flow is over, when I assist her to some extent until later in the fall when cold weather sets in. Then I assume all the work, both with bees and chickens. While I do quite well with the bees, there is occasionally a season, as all beekeepers know, when the honey crop is short or an entire failure; then an income of from \$150 to \$175 per year from our chickens comes in good play to bridge over the shortage from honey.

"But," many ask, "will the two get along peaceably together? Will not the bees sting the chickens?" Well, that depends. So long as we kept any black chickens we had many a chick stung to death; but when we changed to Barred Plymouth Rocks there were not so many. Five or six years ago we changed to Buff Orpingtons, and have had practically no trouble from stinging since, although the hens with their broods (we use no incubator nor brooder) are among and close to the hives more or less all day. I don't think we have had a chick badly stung

since we have kept Buff Orpingtons. A very few times I have seen one or two bees attack an old hen when she came too close or became too fussy close to a hive. But she would soon skeedaddle, and the brood would follow.

One advantage in keeping chickens in the same yard with bees is getting rid of drones. I don't aim to rear many drones except in a few choice colonies; but, as all beekeepers know, almost every colony will find or make a place to rear a few drones; and in manipulating my bees I always have a sharp knife in my tool-kit; and if I find any undesirable drone brood I shave their heads off, when, of course, the bees will drag them out and drop them in front of the hive, where the chickens soon find them and learn to eat drones, and soon go to catching live ones, picking them from among the workers on the alighting-board, and even catching them on the wing in front of the hive. I have my hives close to the ground; but if I have any choice drones that I wish to save I must set the hive 20 or 24 inches above the ground. This work is invariably done by the young chickens after the mother hen has left the brood, or when they weigh 1 1/4 to 2 lbs. I don't remember ever seeing an old hen catching drones; but the chicks do, and they go about it with perfect impunity, seldom being attacked by bees. Not all the chicks nor even a majority of them catch drones; but every season a few learn the trick, and they practice it industriously and successfully. I have often watched them to see if they caught workers, but could never see them catch a worker.

The Buff Orpingtons do finely for us along with bees. They are of good size, easily confined, a fair layer, good mothers, not easily excited, a splendid table fowl, and the nicest fowl to dress we ever raised. They sell very readily on that account, but the hens are inclined to be a little broody.

We eat all the eggs and chicken we want, and sell \$150 to \$175 worth of eggs and chickens per year. We also keep a cow, and from these three sources we make a comfortable living on our three acres of ground, and have a little laid by for a rainy day which is fast approaching.

Before I engaged in bee and poultry keeping I worked by day's work, and little more than made a living. For some years I have not been able to do hard work; but by keeping bees and chickens I need not work nearly as hard as I formerly did, and can make a much better living than when doing day labor; and there are many elderly people in limited circumstances barely making a living at hard labor who could materially increase their income, and per-



Anton Larsen and his six honey-eaters.

haps prolong their lives, if they would quit hard labor, for which they are no more fitted, and engage in these same occupations, especially if they have a small permanent home of their own.

Huntington, Ind.

A BACK-YARD POULTRY-PLANT

BY GEORGE T. WHITTEN

My poultry-plant occupies a plot of ground about 20 by 50 feet, and consists of four houses six feet square, two-story, with gable roof, $6\frac{1}{2}$ feet to gable, and $4\frac{1}{2}$ feet to the eaves. The lower floor is for a scratching-space, and the upper one for roosts and nests. A shutter is provided on each side, two feet high; these open out and rest on prop, and are kept open in summer for ventilation and shade. They are closed in winter, making the house absolutely tight except the door in the south end, 2 feet wide by 5 feet 8 inches high, which has wire on the inside and muslin on the outside. The cloth is put on late in the fall, and taken off early in spring.

All inside fixtures are home-made except the drinking-fountains. These are eight-quart galvanized-iron pails, costing ten cents each. They are the most convenient fountain I can get, and give the best satisfaction.

They are placed on a slatted platform raised 14 inches from the floor. This keeps the water clean, and does not take any of the floor space.

I feed scratch food in the litter night and morning, except two or three feeds a week when oats, corn, or boiled vegetables are given for a change. Dry mash is kept before them in hoppers at all times, also grit, shell, and charcoal. They have green feed every day in the form of lawn-clippings, turnips, Swiss chard, or beets. I sometimes feed sprouted oats.

My chickens are hatched by hens and incubators both, and brooded in fireless brooders. These are 3 feet square, with floor, and a covered rim 3 x 6 feet on the front. Cheese-boxes are used for hovers with a hole cut on each side in front 10 inches apart, so the chicks can pass in and out at either side. These are placed in shoe-boxes that are the same width as the cheese-box, so that the entrances to hovers come in the corners of the box, or against the sides. In this way the chicks crowd one another into the hover rather than out. A cover is provided for the hover by means of a wire hoop that fits the inside of the cheese-box, and covered with burlap. Wires for holding it are bent to hang over the edge of the box. By these the mats can be adjusted to the size of the chicks by raising or lowering them. Chick



Mrs. Larsen and her flock of grain-eaters.

feed is used, and growing mash kept before them at all times. Green food is given every day.

For the best results pullets should be hatched the last of March or the first of April, and kept growing as fast as possible so they will begin laying during October.

Results for one year: 39 hens averaged 171 eggs each for the year. Paid out for feed, etc., \$115.29; received \$277.65—profit, \$162.36. This includes eggs and chickens that were produced and sold.

I think there is no combination that could be worked together on a farm to better advantage than bees, poultry, and fruit.

Hartford, Ct.

WEEDING OUT THE HENS THAT DO NOT LAY

The Use of Trap Nests

BY C. A. KINSEY

Three years ago I bought two cocks and twenty hens, reputed to be good layers, because, I suppose, they were White Leghorns. For two years those hens and increase did not more than pay for their feed. I fed them the best I knew how, which was according to the good old days on the farm when I was small, and went out in the morning and threw the hens a pail of grain from the granary, and gathered the eggs at

night. Once a year or so father traded a rooster with one of the neighbors, and the neighbors all did likewise. I don't believe now that any of those flocks ever paid their keep, barring the fact that there was a good deal of grain scattered around that they could get which otherwise might have been wasted.

A year ago I got a second-hand incubator, and through the catalog with it I secured a lot of free poultry literature from the manufacturers.

Feb. 1, 1913, I selected 25 Leghorn pullets and 8 Barred Rock hens and pullets, and I bought two Leghorn cockerels and a Barred Rock cockerel to mate them with. They commenced to lay during the fore part of February, and laid fairly well during March and April, but not enough to pay for more than their feed. I knew that some were laying better than others; and in order to get their eggs for hatching I made some trap nests, put numbered bands on the pullets, numbered each pullet's eggs, and saved the best layer's eggs for hatching. I put in the trap nests May 12, and by July 12 I had found out several things about my hens. Out of the 25 Leghorns there were six that had laid 35 to 40 eggs each. Others laid from 5 to 20 each, and three *none at all*. They were good lookers; and but for the trap nests no doubt I would still have those

three hens for breeders this year, for those three hens, mind you, would go into the nests just as often as the better layers, settle themselves comfortably for an hour or so, and then cackle as loud as any, but never lay an egg! When I dressed them for the table later, I found them to be practically barren.

During the latter part of the season some of the medium layers caught up with the best ones; the others I sold, or killed for our own use.

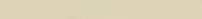
The total eggs laid by the flock from March 1 to Dec. 1 would pay for the feed consumed by the old flock and the new.

We have had eggs for our own use and hatching, and sold the rest; had all the fryers needed for a family of four, and sold \$16.00 worth besides; and have for breeders 15 Leghorn hens and 6 Barred Rocks; also 30 Leghorn pullets that are beginning to lay, and 32 Barred Rocks. I got some new cockerels of both breeds from flocks of good reputation as layers. I am also following the best methods I can learn as to feeding; viz., feeding in litter for winter, balanced rations, mash, green bone, sprouted oats, chopped vegetables, clean quarters, etc., and if they don't lay it will be because it isn't in them to do so. However, I expect that, with proper care, they will lay fairly well, and, with the aid of the trap nests, I shall be able to select the best layers, and thereby get cockerels that will produce layers, for it is claimed that the cock is two-thirds of the flock in that respect.

Another thing, I don't have to hunt in all the out-of-the-way places for eggs. The hens prefer the trap nest, where they are unmolested. The big Barred Rocks will even push their way in some time early in the morning before I have set them for the day.

Of course, trap nesting requires attention. For the good of the hens they should be looked after every two hours, at least, though mine have to go from one o'clock to nearly six in the afternoon.

Belgrade, Mont.



ASHES TO EXTERMINATE RED MITES AND LICE

BY W. H. LEWIS

It is over 30 years since I bought my first dozen of eggs from pure-bred fowls, and about the same time made an incubator. During this time I have had about all of what A. I. Root calls "happy surprises." "Convergent" poultry-yards and round barns were voted a "dismal failure" in this region about 20 years ago. A few were

built of each; but in every case they were torn down and the colony plan, or long house with yards on each side for fowls, and the square barn for the farm, were substituted.

Hot tallow for chicken perches I tried about 15 years ago, and it is a waste of time and tallow. Dirt sticks to the tallow in a very short time, and the mites make "bridges" over it.

During these thirty years, up to the last four years, my wife has been considered the "boss" of the poultry part of our ranch, and she knows something about chickens too. During the time mentioned of our "joint" management we have fought mites and lice by the millions, and I must confess we came out second best, as we never could exterminate them.

Four years ago I determined to take up the chickens as a sole business, having arrived at the age where the old man is crowded out by the younger, and also concluded that, if I could not make a success, it did not much matter, as my wife and I have always tried to sit tight on the "nimble shilling."

I commenced by increasing the flock, and cleaned out all the chicken-houses; we had used a good deal of slack lime as a deodorizer prior to this time; but not having any on hand the idea occurred to me to use ashes, which I did, and soon came to the conclusion that ashes are better than lime. Before summer was over I also noticed that my young chickens in fireless brooders were alive with mites while the stock in the old houses was perfectly free—first credit to the ashes. About this time I sold the old farm, built a new home and a lot of chicken-houses on the colony plan; moved my young stock from the old farm, sold the rest, and have done nothing else since (three years) but tend to my chickens and bees. I have used nothing in my chicken-houses (which are double-floored) but coal ashes as a deodorizer, about two gallons to each house holding about 50 hens, once a week at cleaning time, throwing the ashes on the droppings platforms, and over the top and ends of the roosts. Up to the present I have not seen a mite, no lice, but few fleas. These houses, now three years old, have not been whitewashed, nor has a particle of disinfectant of any kind been sprayed on the inside; and now I will give a bonus big enough to start all the millionaires of the United States hunting to find a single mite, louse, or flea on the inside. Nothing but a plentiful dusting of coal ashes did it, and the ashes go out with the droppings every week to fertilize the garden, and a new lot

put in. Two years ago I gave my daughter, living on the lot next to me, a dozen hens from my pens, and in about a year the mites and lice came near finishing them—no ashes used. Since then ashes have been used according to my directions, and now chickens are clean.

To conclude, thoroughness is necessary in every thing to be successful. If my method is followed, and fine coal or wood ashes used, it will positively rid and keep clean any chicken-house, at least in this locality.

East Barnaby, B. C.

THE BEST POULTRY-HOUSE FOR SUMMER AND WINTER

A Home-made Poultry-house for a City Lot

BY E. H. UPSON

After more than forty years of experimenting with different styles of houses I have, by close observation, come to the conclusion that a cheap well-ventilated dry house is more satisfactory than the more elaborate affair. Having retired from the farm I am now located in the suburbs of a city of 13,000, and last spring I built a poultry-house which is so satisfactory that I should like to describe it briefly for the benefit of others of the GLEANINGS family who, like myself, are small beekeepers and poultry-raisers in a sort of play-and-profit combination.

The house is 12 x 20 ft., inside measure, and 7 feet high at the eaves. It has a pitch roof, and is set on a solid concrete wall. In order to make it rat and mouse proof I cemented the floor with a concrete of one part Portland cement and six parts gravel without sifting.

For convenience in letting the fowls to and from the yard I have an opening about 9 by 18 inches, fitted with a slide which I carefully close at night, and feel sure that nothing can molest the chickens, as all other openings are carefully protected by galvanized wire cloth. In one side, and near the end, I have a door 2 ft. 8 inches by 6 ft. 6, which, of course, I keep closed all the time except when in actual use. The building is enclosed with beaded drop siding, which makes it sufficiently warm for ordinary purposes.

For ventilation I left two openings on the south side, each 20 by 60 inches; one opening on the north side, 20 by 60 inches, and one in the east end 20 by 40 inches; also an opening in the door 20 x 20 inches. All these openings are closed with heavy galvanized cloth of mesh 5 to the inch. For summer I open all these windows and leave

them open; but for winter I tack heavy brown muslin over the openings except on the south. I have two barn windows, and on the east one window. This gives sufficient light, and the muslin gives sufficient ventilation and at the same time prevents the winds from blowing into the building. I have two rows of perches extending the whole length of the building on the north side. Two rows across the west end, and two rows on the south run up nearly to the door, which is located near the east end. These perches will accommodate 150 ordinary-sized chickens, and are high enough to give plenty of room for nests underneath. The perches are all placed above droppings-boards; and for ease in cleaning, the droppings-boards are all hinged on one side and hooked up on the other, so that it is the simplest matter in the world to clean the boards. For convenience in handling the fowls I placed the perches in rows around the walls, and can reach any bird in the house from the floor without disturbing any of the others.

The material for this building cost about \$90 in our local market here. This includes paint for two good coats.

Inasmuch as I did all the work myself, digging the trench, making the wall, doing all the carpentering, painting, etc., I am unable to state just what the entire cost would be; but the labor and painting would probably be not far from \$35 at present prices for labor of this kind. Some readers may wonder why I use a cement floor instead of a board floor. I will tell you. I consider a board floor the *worst* factor in producing disease among fowls that I know of.

Ubee, Ind.

A WOMAN'S EXPERIENCE WITH BEES AND CHICKENS

BY MRS. S. H. STOCKMAN

I have been a beekeeper for forty years, and a poultry-raiser for more years than that. As I said in the March 1st issue of GLEANINGS, my husband and I were in partnership with the bees after the first few months (not a silent partnership) until I took sole charge of the 20 colonies left, about 15 years ago, I think; but the poultry from the first has been my sole charge.

My husband's mother started me in the poultry line in 1870—43 years ago—with a Brahma hen and her flock of crossbred chickens. It was late fall, the chicks were about half feathered, and I smile now when I think what an unprepossessing lot they were; for if there is a more ungainly thing

in existence than a half-feathered Light Brahma chick I have yet to see it. I have never been out of hens since. I commenced beekeeping in 1871, and have enjoyed both as well as helped to keep the family pocket-book from getting entirely empty at times.

I have kept many pure breeds and some crosses; but after all these years and the experiences which they have brought me I prefer the White Wyandottes for a general all-round-purpose money-making fowl. If well bred I find them healthy, good feeders, good layers of handsome eggs, and always ready for market from broiler size to adult fowl. I have of late years tried the Rhode Island Reds and Barred Rocks beside them, and found the White Wyandottes ahead in many respects. I have hatched for thirty years, mainly with incubators, and raised in brooders. I used at first the Monarch as made by James Rarkin; later the Cypress incubators and brooders, which we have found perfectly satisfactory if given proper care. We hatched chicks then by the hundreds for several years, and had very little loss by disease, my husband using the incubators and I the brooders, and caring for the laying hens. For the last 15 years I have kept from 50 to 100 layers, and raised from 100 to 200 chicks, seldom with a loss of more than half a dozen for the trying time the first two weeks.

I know well from experience that bees and poultry go well together in the way I manage it. While my husband is running the incubators in March and April (as we must hatch in those months in this State to get well-matured pullets for winter laying), I am looking over the brooders, cleaning them out, etc., and any thing needful, doing also the same with the bees. We ran a bee-supply business at our village; had for 15 years before coming to the farm, and I did about all the nailing and painting, putting together the frames and other inside work of the hives, so I well know how to do it, and enjoy doing it. Still, when the chicks hatch I take the sole charge of them and the brooders. After the bees are all looked over in April there is not much to do for them, so I give the chicks my sole attention for two weeks, then get them on to dry chick feed; and after that, with full feed and water-dishes, they nearly care for themselves. When the busy time comes with the bees in July, swarming time, as I have my queens all clipped, and practice brushed swarming, I soon have them so but little needs to be done for them except to give them room if needed; and as I have their fixtures all ready in early spring I have nothing to do but set on the filled supers.

About Aug. 1 I take off all clover honey,

prepare the hives for the fall flow from goldenrod, fireweed, and aster; cut out and sell all the cockerels that have reached the broiler size, and all the undersized pullets; sell alive all my two-year-old hens, which compose about half my flock of about 100, leaving room for my 50 or more pullets which I get into the house for winter laying. I sell all my stock alive to a neighbor who supplies a large summer hotel. My bees usually get enough for winter from the fall flow, and seldom swarm after July. So I generally have little feeding, if any, to do; so by October I am pushing my pullets with good feed, and get them to laying by Thanksgiving or before.

Auburn, Maine.

OLD HIVES RETAIN THEIR VALUE

Painting Necessary

BY L. W. CROVATT

Apropos of the discussion, p. 750, Nov. 1, regarding the value of old hives to the producer of honey, I wish to say that the article was correct in all essential details, as has been demonstrated in a practical manner in my own yard. Dr. John S. Howkins, who was, perhaps, one of the largest bee-keepers of this section of Georgia, had at one time 400 colonies located in West Savannah. Illness caused the physician to turn the active management of his yard over to other parties, and, as usual, neglect caused a quick deterioration both as regards the attractive appearance of the yard and the production of honey, the bees having been allowed to dwindle rapidly.

After one year Dr. Howkins decided that to attempt caring for his bees was out of the question; and at the eleventh hour, in a figurative sense, I was called upon to take over the bees and fixtures. Of the latter there were, perhaps, some hundreds of frames and a hundred hives. These had been in use for three or four years, some longer; but after getting the bees and empty hives to my home yard I immediately stored them out of the weather and made such small repairs as necessary, this being largely in the form of new rabbets, etc. The hive-bodies, after exposure to the elements, have proven, after a thorough examination, to be absolutely sound, only about ten or twelve being bad. These were discarded, and the sound ones again placed in use. The old hives are doing full service, having been in use in my yard for over nine months, and they compare favorably with the new ones—that is, stock made up for increase, etc., within the past few months.

I regard the old hives as equal to the new so far as point of service is concerned, and the outlook now is that a new coat of fresh paint will be all that is necessary to carry them through several years of work in the apiary. In view of the advance on lumber the advance on hives was a foregone conclusion some time ago, and the saving in this line represents a rather "pretty penny" in the operating expenses of this and the coming year.

Hives can be saved and used constantly for years by the judicious use of paint; but it is a wise move on the part of the Southern beekeeper to have the bottom-boards well above the ground in order to avoid the absorption of moisture from the bottom-board into the lower edges of the body sides and ends.

And now for the results of painting. I am well aware of the fact that there are strenuous advocates of the unpainted hive; but if these had gotten a glimpse at the results of the weather on the few bad hives they would have probably been convinced

that paint is valuable in the preservation of the wood; for in every case where the old bodies had crumbled from rot, the outer portion, in the form of a shell, was the only part remaining intact—rotten to a certain degree, but by far better than on the inner portions. Had it not been for the paint the whole structure would have crumbled at the first rough touch.

Savannah, Ga., Nov. 25.

HARD CANDY FOR WINTER STORES

Some Experiments in Wintering Bees on Candy Alone

BY H. H. ROOT

As promised in our last issue, we are presenting herewith a number of engravings showing the different steps in the process of supplying cakes of hard transparent candy made of granulated sugar and water.

For the benefit of our readers who do not have access to back numbers we are repeating herewith the directions that have been given before in these columns:

HOW TO MAKE THE CANDY.

Into a dish of hot water on the stove slowly pour an equal amount of sugar, stirring constantly. Make sure that the sugar is all dissolved before boiling commences. If this precaution is not observed, some of the undissolved sugar is likely to burn, injuring the flavor of the candy and almost surely causing trouble with the bees later. If you have a candy thermometer, watch the temperature, and do not let it go above 275 to 280 degrees. Test frequently by dropping very little of the syrup into cold water (about 50 to 55 degrees F.). When the boiling has continued long enough the drop of candy, when cooled in the water, should be hard and brittle when taken out; but when placed in the mouth it should soften slightly, so that it is tough. When this time has arrived, pour the syrup immediately.



FIG. 1.—The finished cake or block of candy. It measures approximately 1 1/2 in. thick, 6 1/2 in. wide, and 9 1/2 in. long. Weight about 5 lbs.



FIG. 2.—Giving the candy to the bees.

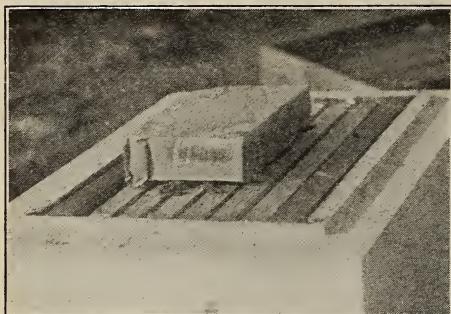


FIG. 3.—Cake of candy in position.

The color of the candy when cold should be about that of light amber honey. If it is darkened very much it is scorched and unfit for the bees. To prevent the scorching, reduce the fire toward the last so that the syrup will boil but slowly.

We find that the block of candy is made tougher, and that it is less likely to assume a granular form so that it crumbles to pieces, if a small amount of honey is mixed with the syrup. About one pint of honey to 25 lbs. of sugar is sufficient. We also find that a given amount of sugar will make very close to an equal amount of candy. In other words, if one desired to make up 50 blocks of candy about the size shown in these illustrations (which average 5 lbs.) he will need to get ready about 250 lbs. of sugar.

If the boiling is done in a kettle it is a good plan to put in about half a teaspoonful of lard in order to prevent the mixture from boiling over.

If the paper pie-plates that have been mentioned before in these columns hold enough candy, the syrup, when it is ready, may be poured into them; but ordinarily a somewhat larger amount of candy is necessary. The pie-plates hold about 1½ lbs. of candy.



FIG. 5.—Covering up the candy with a chaff-tray.

The cakes of candy shown in these illustrations are about 1½ inches thick, 6½ wide, and 9½ long, and they weigh, on the average, 5 pounds. Forms should be made of proper size, which will make the cakes of candy smaller at the bottom to facilitate their removal when cold without taking the forms apart. Before pouring in the candy, line the forms with wrapping paper, folding the corners neatly.

The appearance of the finished cake of candy is shown in Fig. 1. When giving candy to the bees, lay three or four small sticks across the top-bars in order to leave a bee-space underneath, Figs. 2 and 3. Lay an enamel cloth on top, Fig. 4, over which set the chaff-tray or super containing a chaff cushion as the case may be, Fig. 5.

The bees start working on the candy at once; and after a week's time, if the cakes are lifted, Fig. 6, a line of grooves corresponding to the space between the top-bars is the result, said grooves being eaten out by the bees.

Fig. 7 shows a close view of the candy after having been in the hive just one week. By this time the three spacing-sticks will have become imbedded in the candy to some extent; but the spacing is not so important after the bees have once eaten some of the candy, forming passageways.

Fig. 8 shows the remains of a paper pie-plate of candy that has been in the hive for several weeks. The plate retains its shape



FIG. 4.—Sheet of enameled cloth laid over the candy.



FIG. 6.—Examining cake of candy after being in the hive a week.

fairly well, even to the last, although, of course, when the candy is about gone the bees gnaw the edges to some extent.

We are wintering enough colonies on hard candy alone, without any liquid honey or syrup whatsoever, to give the plan a thorough test. So far all is well, although we shall make a fuller report later on.

On Dec. 4, when we made the last examination, we found brood in all stages in many of the colonies. The great blizzard occurred Nov. 9—11; but the weather during the last half of the intervening period was quite warm.



FIG. 8.—Paper pie-plate of candy left in the hive until the candy had been practically consumed.

Mr. Pritchard believes that hard candy is the best material to feed in an emergency during cold weather. It may be that in some cases it might pay to winter bees on candy alone throughout the whole winter, although the bees having the candy seem to be somewhat more active and more inclined to fly than bees having sealed stores of sugar syrup or honey. No doubt this is because the food supply is always opened up, so to speak, thereby placing the bees in very much the same situation that they would be in if they were being fed slowly.

BEEs AND POULTRY, OR JUST BEES FOR THE EXPERT APICULTURIST

BY O. L. HERSHISER

It is to be presumed that the poultry enthusiasts will come forward in the special number opened for a discussion of their interests to show how that occupation may be taken up by the beekeeper with profitable results. If it be permissible for one who holds adverse views to gain admission to this poultry circle, and raise his voice above the din of cackling and crowing I should be pleased to say a few words.

Can an *expert apicultrist* afford to divide his time and attention, and devote a part to poultry? The results of close observation and careful calculation prompt me to answer, emphatically, *no!*

I have an acquaintance who is abundantly able to carry on the



FIG. 7.—A close view of a cake of candy on which the bees had been feeding one week. The grooves show the amount the bees had eaten.

poultry business in the most approved fashion, and he is noted for his strict attention to the details of his business enterprises. Some years ago he launched into the poultry business with a zeal born of a determination to make it a financial success. Eight thousand dollars was invested in a strictly up-to-date plant. His best season was some years ago when 25 cts. per dozen was realized for his entire output of 3000 dozen eggs, and his gross receipts for the same were, therefore, \$750. As the plant was run for eggs, the receipts for breeding stock, eggs for hatching, and poultry for table use, are inconsequential. From the total gross income must be deducted cost of feed, interest on investment, taxes, and other lesser items, such as heat, egg-containers, help, etc.

Only superficial mathematical calculation is required to show that there was little or no real profit in poultry for this individual out of the sum slightly in excess of \$750. Allowing for eggs for hatching, poultry for breeding and for table use, must first be deducted interest on investment, \$480, and taxes at the rate of over 20 per thousand, or at least \$160, making the sum of \$640. Then we have remaining very little for all the other items of expense and profit. It is needless to say the business has been abandoned and the plant gone to destruction.

As the writer had an apiary of from 75 to 150 colonies of bees in one corner of the plot of this poultry establishment for several years, a fairly accurate comparison may be made. The best season with the bees was a crop of 8000 lbs., about 2500 of which was comb, for which an average of 11 cts. per pound, or \$880, was realized. Expenses consisted of rent of yard, \$25 per year; cost of sections, foundation, cases, and help, in all not to exceed \$180, leaving for the season a profit of at least \$700, and this on an investment hardly in excess of \$1100.

I have in mind an apiary consisting of about 65 colonies, spring count, at this time increased to 118 colonies, situated 30 miles from the owner's home. The honey from this yard has been sold for a little over \$625; and, allowing \$175 as the value of the increase, it makes a total gross profit for the apiary of \$800. Allowing \$150 for all expenses, which would include interest on an investment of \$1000, there is left \$650 as the net profit, or 65 per cent on the investment. Figures showing as much profit for an apiary about a quarter of a mile from the owner's home could be shown; and figures showing over 100 per cent for an apiary about 15 miles from the owner's home could also be produced. The hired-help bill for operating these three apiaries

did not exceed \$20 except teaming and carpenter work in the honey-house construction, and these are not exceptional cases.

Except for a very few extreme specialists who have, by expensive advertising and years of persistent effort, succeeded in working up a demand for eggs for hatching at several dollars a dozen and birds at scores of dollars each, where are the poultry-men who can show the net profits from their investments that the expert beekeeper can from his?

Out-aparies need be visited only at intervals, and are left for the winter months without attention, and may be left for weeks at a time during the summer months without detriment; but the poultry-man must give his fowls daily attention, at least in the matter of feed and the gathering of eggs. Indeed, any success with poultry depends upon the strict and critical attention of the man behind the hen, *and he must be in evidence daily.*

Operating several out-aparies by a man living in a village or city where neither bees nor poultry could be kept, is entirely practicable; but the keeping of one or several poultry establishments successfully at such long range is unthinkable.

Extracted honey does not deteriorate appreciably if kept one or several years, when market conditions may warrant it; and even comb honey may be successfully carried over the winter if necessary; but the poultryman must sell his eggs and dressed poultry when fresh, regardless of market conditions. After all his "fuss and feathers" with the plumaged tribe, the average poultry-keeper receives a net compensation for his work and attention that would make the beekeeper's occupation look like a failure.

I imagine the poultryman who finds the close attention required in his business a bit wearing would find restful recreation and satisfactory profit in keeping bees provided he has the natural adaptability for it; but if the expert apiarist wishes to make more money without the close daily attention required in the poultry business, and has a few hundred dollars to invest, let him establish some out-aparies and "keep more bees."

This is not to be taken as advising against the keeping of a few chickens to provide fresh eggs and poultry for the home table, nor the keeping of poultry by the beekeeper situated on the farm, where the details can be attended to by hired help, and where more or less cheap feed is available — nor the keeping of poultry as a pastime, where the pleasure of the occupation is the chief compensation.

Kenmore, N. Y.

Heads of Grain from Different Fields

Power Extractor vs. Hand Extractor

I began to work with bees twelve years ago. I did not know how to use a smoker nor how to get the bees out of the honey-supers. I have gained much valuable information since then from reading about how to care for bees, and from experience.

At first I ran for comb honey; then I ran part of the bees for extracted honey, and used a four-frame honey-extractor; but I found that it was nonsense to use a hand power extractor if there is much extracting to do. I made a mistake when I bought the hand power. I traded it and bought an eight-frame automatic extractor and a 1½-horse-power gasoline engine to run the extractor and to pump water. I back the wagon up to the pump at an out-yard and let the engine pump a tankful of water to water the bees. This is a great saving of labor, and it will pay for itself in two or three years if one has much extracting to do. The honey gets thick, and candies fast as the weather gets cold in the fall; and it is hard work to turn the hand-power extractor when the honey is thick.

I use a push cart and haul from four to six extracting-supers, and eight or ten section supers at a trip.

A motor wagon would be handy to haul honey and bees where the roads are good. I have hauled hundreds of colonies of bees with horses and wagon, but it is necessary to be careful to shut the bees up well, and not have the horses near the bees when the hives are opened.

A small honey-house is handy at an out-yard to store bee supplies and to extract and store honey; but the honey-house needs two doors—one at each end, on account of robber bees. One door needs to be double, as the eight-frame extractor and honey-tanks will not go through a narrow door. When the bees are thick at one door where they smell the honey, there will be no bees at the other door where they can not smell it.

I made a mistake by not working for a beekeeper two months or one summer to learn how to work with the bees and how to take the honey, as it is slow work for a beginner.

A honey-house may be in the middle of a bee-yard if one uses a motor truck; but I use horses, and I want it at one side of the yard, so I can load or unload supplies or honey at any time in the day. I have hauled some honey home from outyards to extract it, but I prefer to have a small house at each yard.

I need one small table in the honey-house, high enough to scrape and case the comb honey, and a low table at the end of it. The two take up the length of the room. I want it high enough to put a 50-lb. lard-can under the gate to the extractor when it is on this table. Sometimes I pile more than 200 section-supers on one table at one time, all full of honey. I make the frame of a table out of two-inch lumber and slant the table legs a little at the bottom, at the ends, and at the sides. I have six legs to a table if it is a long one. Where ants are bad, tables are necessary. It is well then to put small tin lids under the table legs, and to put a little pine tar in them.

Chamberino, N. M., Apr. 4. THE BEE MAN.

A Queen whose Eggs do not Hatch

I have been a beekeeper for the last twenty years, and thought that I had seen about all the turns in the bee business; but I have run across something new to me, for we have a queen that has been laying prolifically for the last two weeks, and there is not one single egg hatched that we can find. She is a queen about four weeks old. I don't know her ex-

act age, as we bought her mother this spring from a Texas firm and introduced her; and the queen that we got from Texas was laying nicely, so we quit watching her till we noticed that they were not building up as we thought they should, then we found that she had been superseded, and a young queen was in the hive; and now the young queen's eggs do not hatch. Can you tell any reason for their not hatching?

San Jose, Ill., June 21.

FRED TYLER.

[Once in a great while we run across a queen whose eggs do not hatch. No reason can be given for this; but it is evident that you had such a queen. —ED.]

Do King-birds Eat Bees and Queens?

Question No. 4, page 557, October *Farm Journal*, is, "The king-birds here eat my father's bees, and sometimes catch the queens. Should they be protected?" The answer is, "Yes. The king-bird feeds on beetles, canker-worms, and winged insects. He does occasionally eat bees; but ornithologists declare that he selects only drones, and does not do enough damage to hurt the hive seriously."

I want to know if the answer is correct. I have watched them eating bees a considerable time after the workers had destroyed or ejected the drones. As the *Farm Journal* editor says, the king-bird does not hurt the hive, but he certainly hurts the colony if he gets only one worker, as every little (one) helps, you know.

Abilene, Texas, Nov. 4.

M. E. PRUITT.

[Ornithologists generally agree that king-birds do not eat worker bees; but we have had reports showing that the crops of these birds had been opened, and that scores of worker bees had been found therein. It has generally been claimed, however, by ornithologists that they eat only drone and queen bees. —ED.]

Experiment in Fitting Comb Honey in Sections Successful

I was greatly interested in the article by Dr. Humpert, Oct. 1, p. 674. I have only five colonies of Italian bees in eight-frame hives. In the summer of 1912 I worked with shallow extracting-frames on each side of the super, filled up with 4½ x 4½ plain sections and fence separators. I had a customer who offered to take all the honey produced by my bees; and as I was getting fifty cents for section honey I naturally wished that the extracting-frames were all sections. After thinking it over, I decided to cut out the honey and fit it in sections and give it to the bees to fix, which they did in fine shape. This was during a light flow from balsam. I left the sections on for five days, and received fifty cents each. I found that the best way to cut the honey was with a small fret saw.

Tuxedo Park, N. Y.

E. WILSON.

To Hive Swarms Clustered on Fence Posts

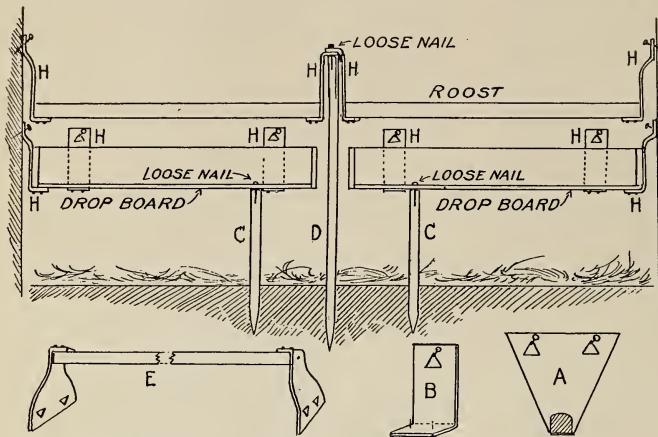
On page 790, Nov. 15, in speaking of places where swarms settle, you say that in many cases they seem to take particular delight in settling on one of the posts of the wire fence where it is a slow and tedious operation to get them. In cases like this, if you will set the empty hive on the ground near the post, and strike the post a heavy blow with an ax or heavy stick, the jar will dislodge the bees and they will fall at entrance of hive as nicely as though they were shaken from a small limb or basket; then a little smoke puffed on the post will stop them from crawling up again. I would rather have swarms alight on posts than on trees.

Filion, Mich., Nov. 24.

DAVID RUNNING.

Removable Roosts and Dropping-boards

For some years I have used the arrangement for roosts described in the accompanying engraving, and found it convenient. It is my own idea, and I do not know that any one else has any system like it. I have not given it to any poultry journal; but if any one thinks it has any merit I shall be glad if he makes use of it.



A, piece of galvanized iron cut 10 inches, triangle shape (nailed to the ends of the roost) with two holes in to hook on two nails in the side of the chicken-house (the nails should slant upward). B, hanger nailed under the droppings-board and supported by nails in the end of the house. C, broom handles driven deep in the earth floor to support the droppings-board with a $\frac{1}{4}$ -inch hole bored through so that a ten-penny nail can drop in. D is a similar support for roost hangers. E is the roost turned bottom up on the floor for small chicks. The perch is then 7 inches high.

The advantage that this system has is that, with a 7-inch hoe having a handle 4 ft. long, and an iron water-bucket, I can clean the droppings-boards from 50 hens, and throw on three handfuls of road dust in about five minutes.

Furthermore, all the hangers (iron) and supports are easily kept greased with crude oil or soft grease with a paint-brush, and will last some time. Then if the roosts hang 12 or 14 inches from the wall, no insects can get to the hens.

Finally, the droppings-boards, being 15 inches from the floor, the hens can go under them and use all the floor space, and the sun can shine underneath also. If wanted, straw can be spread all over the floor for scratching, and all this arrangement can be taken out to clean or oil, and put up again in a few minutes; and it can be easily and cheaply made, the galvanized iron can be cut, including nail holes, with a sharp cold chisel on a hard-wood block if no tinner's shears are handy. My droppings-boards are made of soap-boxes.

St. Louis, Mo.

CHAS. W. COLLETT.

Bees Kept in Poultry-house

Bees may be nicely kept in a poultry-house if it is kept as a poultry-house should be. I built such a one last year, and it practically does not need a thing after it is ready for the poultry to make it ready for the bees, and the bees do not take up any of the room that poultry would use. One has to visit the poultry seven hundred times a year (twice a day), and they also have to be provided with an enormous lot of feed; but the bees will get along with only two visits a year, and no feed, or feeding

only what they supply themselves, so I do not see why one should not combine the two; for if one pays, the two ought to pay better.

Grand Rapids, Mich.

J. A. PEARCE

Blue Ointment to Kill Lice on Poultry

In a recent issue of your magazine Mr. A. I. Root mentions having trouble in keeping his fowls free from lice.

The poultrymen in this vicinity apply blue ointment around the vent, and consider this treatment one of the most valuable discoveries for the prevention of body lice on fowls that has been made for some time, as one treatment will usually keep the birds free of lice for from four to six months. The body lice go to the vent to drink, and, not being able to cross the ring of blue ointment, perish.

The blue ointment must be specially prepared by being softened with vaseline, as the ordinary article is too hard to spread. The method of applying is to take a small amount on the end of the finger and hold

it against the bird until it melts, then make a ring. It must not be used on young chicks, as it is too strong, and will kill them; but it can be used after they are six months of age. It costs here 50 cents for half a pound, which is enough for a small flock for a year.

The best time to apply is in the evening, just after the birds have gone to roost, as it is easiest to catch them at that time.

Tacoma, Wash., Aug. 6. DWIGHT WHITMAN.

The Poultry Journals Criticised

I'm getting disgusted with the poultry journals. About all there is in them is a write-up of "Jones' fancy strain of White Leghorns that we visited last week," or "It will pay our readers well to visit Smith's poultry-yards and see his strain of fancy new-fangled breeds," and, of course, plenty of advertisements of the different breeders and supply dealers, which is all right if there were only some practical articles on the problems that are daily confronting the man with a flock of utility hens which he is keeping for production, and not just to sell fancy-bred stock to another buyer at a high price for him to raise to sell to a third party at a high price, and so on.

SUBSCRIBER

[It is true that a large proportion of the poultry journals are filled up with "puffs" for this, that, and the other; however, there are some good journals that are strictly high-class in every sense of the word.—ED.]

A Profit of \$2.20 per Hen; a Chicken that Learned to Eat Drones

In the fall of 1911 we moved into a rented place on which there was no poultry-house; but as we had 15 hens, 13 of which were pullets, I made a coop out of three drygoods-boxes. The following spring I fenced off a plot surrounding this coop with poultry-netting, and confined them. This plot was about four rods square, containing three large apple trees under which I placed 16 colonies of bees. My investment for coop and fence was about \$5.00.

Besides giving me a profit of \$2.29 per hen they performed valuable service by banishing the wood ants from the bees. When I first put my bees in this place these ants were very numerous, and swarmed all over the hives. I went for a shovel and sought out their beds, dug them up to start the chickens scratching, and they did the rest. By scratching up their beds and eating their eggs the ants decided it was too warm a place and moved out.

Bees and chickens lived peaceably together all summer. One pullet learned to eat drones, and would catch them at every opportunity; but I never saw her catch a worker.

Ogden, Utah, Nov. 28. JOSEPH H. PETERSON.

An Enthusiast in Florida

This is our sixth winter in the State, and our fourth one here. One winter was spent on the east coast and one at Winterhaven. We have a home here. We like it very much. I have been a Methodist minister for over fifty-three years. I shall soon be 76 years old. I am fond of fishing, bee culture, and chicken-raising. I bought three stocks of bees last spring; transferred and Italianized them, and out of the three I made seven. I lost about half of the queens by the king-birds. The bees are all in hives of ten frames. I started north July 3, getting back again Nov. 6. There were two hives in fair condition. The other five were nuclei. I put supers on six of the hives. The bottoms of the hives were all well filled. The supers on the two best were well filled—32 sections from one, and 31 from the other. Another had 17 sections, another 16, and the last had 4—100 sections, 4 x 5. All had very good honey. I do not think my bees will be idle more than two months in the year.

JAMES G. TETU.

Tarpon Spring, Fla., Nov. 24.

A Bunch of Questions

I have 18 stands of bees, and am going to buy 30 stands in the spring. Part of them are in crooked combs, but in L. frames and dovetailed hives, so the ones in crooked combs I shall have to transfer to straight combs. This is a fair locality. Please answer the following questions:

No. 1. What kinds of Italians are the best—the golden or leather-colored? Are they the stock you look to for your surplus honey?

2. Do you practice spring feeding to stimulate brood-rearing when the colonies to be fed have plenty of honey? What proportion do you use of water and sugar? and is there any preference in favor of beet or cane sugar?

3. What kind of feeder do you use for this purpose? I have chosen the Boardman entrance feeder. Is there any danger of starting robbing where the feeders are kept clean and no syrup is besmeared on the outside to entice the bees.

4. What time in the spring should I transfer my bees? My plan is to wait until the weather gets warm and quite settled, and then drive the bees and queen into a new hive, put a queen-excluder on top of the old hive, and let it remain for 21 days; then drive the rest of the bees into the new hive.

5. In three weeks I want to divide the new hive and introduce a new queen of the best stock. Is that the right time?

6. When you divide your bees in the spring, say a ten-frame hive, how many stands do you usually make from a strong or average stand, considering the honey crop more than increase? How long should the queenless part be without a queen? Do you put wire cloth over the entrance for two or three days? This last part would consume lots of time for an outyard four or five miles distant. Is the above way

a practical plan, or is stuffing the entrance full of grass a better way?

7. In buying queens with $\frac{1}{2}$ lb. or 1 lb. of bees, is there any advantage in buying the bees to be only a sort of pad to the queen to prevent injury to her? Should the bees be introduced along with the queen to my queenless colonies?

8. Do you practice pinching queen-cells through the swarming season to prevent swarming? I am going to run ten-frame hives for comb honey, and eight-frame for extracting. Do you use full sheets of thin foundation for sections? Is there any real gain by it? Do you use bee-escapes for releasing the bees from the supers?

9. In raising a few queens to restock with, will the bees make a queen-cell out of a regular-sized honey or worker cell? In Bulletin 49, by the Department of Agriculture, Albany, N. Y., the instructions are to take a frame that has had brood in it once or twice; cut two rows of cells, and leave one. Then let the frame be cared for by a queenless colony; but it does not state whether it is to be drone-cells or not. Would not the regular cells be too small for queen-cells?

10. What kind of wire cloth should I use to make cages for caging queens? Can I get it of the regular dealers?

Belle Fourche, S. D., Nov. 30. W. A. LOSH.

[1. As a general thing we prefer the original strain of Italians—the leather-colored ones. There are some fine strains of goldens; but most breeders of them have apparently overlooked the business qualities, and breed for color only. This is the reason why so many of the goldens are inferior.

2. The practice among our best producers is to feed liberally in the fall, and to avoid spring feeding as much as possible. Still, there are times when stimulative feeding in the spring can be practiced to advantage. But very often a beginner does more harm than good. For stimulative feeding we use equal parts of sugar and water well stirred together. For fall or winter feeding, we use two parts of sugar to one of water.

There is no preference between the two sugars; in fact, there is no possible way of detecting the difference, even by the best chemists.

3. Of all the feeders on the market we prefer the Boardman. It is excellent for stimulating, and does well in early fall in feeding up for winter. It is not, however, suitable for late feeding. Where one desires to give a colony its full supply of stores at one or two feeds it is too small. In this case the Miller feeder is better.

The Boardman will not cause robbing if one will use ordinary precaution. The outside of the cans and the feeder blocks must be cleaned of any daub of syrup, and the colony must be strong enough to put up a fair defense at its entrance. In feeding weak nuclei an inside feeder, or, better still, slabs of candy are better.

4. The best time to transfer in the Northern States is in the spring during fruit-bloom; but the work may be done at any time of the year providing there is no danger of robbing. If practiced during the clover flow it will cause more or less of an interruption with the colony; and if the season has been on for any length of time it means the cutting up of combs that are heavy with honey. By transferring in the spring during fruit-bloom it avoids this.

Your plan of procedure as outlined is not quite clear to us. If we understand you correctly you mean that you drive the bees with their queen into a new hive on empty combs or frames of foundation. We infer that the old hive is left on the old stand, and that the new hive with its bees and queen is put on top of the old stand, with perforated zinc between. If this is your plan you will be doing an unnecessary lot of work. Better by far remove the old hive from its stand a few feet. Put the new hive on the

old stand and drive most of the bees with the queen into the new hive. Then 21 days later, after all the brood is hatched in the old parent hive, shake the rest of them in front of the entrance of the new hive; finally remove the old hive with its combs, which may now be melted up into wax.

5. The answer to this question will depend somewhat on the mode of treatment adopted in the answer to No. 4. If you are running for increase you can divide. If you are running for honey, we would not advise you to make the division.

6. As a general answer to this question, we would state that, if you desire to make increase, you should not practice dividing. If you desire to make increase and honey both, practice the Alexander method as described in his book. Four or five nuclei can be made from one strong colony; but this is on the basis of no surplus. As a general proposition we would advise making all increase after the main honey-flow is over, and then resort to feeding if the bees need stores. When practicing dividing it is usually necessary to shut up the entrances of the nucleus (moved from the old stand) with a little grass, for two or three days. Grass is better than wire cloth, because it will wilt away, releasing the bees without the aid of the beekeeper. But a far better plan where one has out-apiaries is to move the divided colonies from an outyard. In other words, make the division in some yard other than the one in which they have been stationed previously. Try as you may, splitting a good colony into several units, in the same yard, will result in a part of the flying bees going back to the old stand. The veteran beekeepers know how to overcome this to a certain extent, but not entirely.

Every nucleus should have a laying queen, a virgin, or a cell, as soon as the division is made; otherwise valuable time will be lost. Another thing, a nucleus, as a rule, will not produce cells that will result in strong, vigorous queens.

7. Packages of bees without combs can be sent with or without combs. The presence of Her Majesty does not, so far as we can discover, detract from or add to the success of the shipment. If a pound of bees, however, is given to a nucleus with a queen, the latter should be caged in an introducing cage for 24 or 48 hours. It might be advisable, also, in the case of hybrids or cross bees, to smoke both lots a little before uniting.

8. It is the general practice of honey-producers to destroy queen-cells at the beginning of the swarming season. Swarming-cells, if left unmolested, are almost sure to cause swarming.

You had better run your eight-frame hives for comb honey, and the ten-frame for extracted. In producing comb honey it is always advisable to use full sheets in sections. Starters are used by the manufacturers of bee-supplies for the reason that sections with full sheets do not ship well. Aside from this, there is no reason why starters should be used except on the ground of economy, and a poor economy it is.

We use bee-escapes when we can. Sometimes at outyards we shake and smoke the bees out of the supers.

9. In the instructions above referred to, worker-cells are probably meant, both on the ground of convenience and because they might be accepted more readily for queen-cell purposes. Before you expect the bees to work out these prepared cells, all other brood in the hive to which they will go should be removed first. If you succeed by this method you will need to follow carefully the directions in the bulletin referred to.

10. Ordinary black painted wire cloth will give good results. Do not use any wire cloth painted green, on account of the Paris green in the paint. A two or three frame nucleus with a queen will ship almost anywhere with scarcely a failure.—Ed.]

Danger of Spontaneous Combustion

Referring to page 599, Sept. 1, do not store waste in an empty hive, in a box or a small building, but in a tin box with tight cover. Never let waste touch wood nor get air to feed any flame that may start in it.

Spontaneous combustion is one of man's worst enemies, being but little understood, and working silently day and night. It requires just enough air to combine with the combustible to raise it to the temperature of ignition. A draft of air would keep the temperature down and prevent it.

An empty hive is an ideal place to start a fire by spontaneous combustion; but in a tight tin box the heat passes through the tin, lowering the inside temperature, and in case of spontaneous combustion the tight tin keeps the air away from the fire, allowing it to smoulder without danger.

Hammonton, N. J., Sept. 7. C. E. FOWLER.

One Cause of Dark Wax

If I boil bee-comb in an iron or metal kettle to extract the wax, will the wax be a dark color?

Williamson, Pa., Dec. 1. L. H. LINDEMUTH.

[Wax will not be darkened in an iron kettle unless you let it boil for a considerable length of time. The best way, as soon as the wax is melted, is to dip it off immediately; then you will find no discoloration. An iron kettle will discolor wax a great deal less than a receptacle of galvanized iron, or, in fact, of almost any other metal except the plain iron. The important thing is to see that the wax is dipped out and cooled as soon as it is melted. Wax kept hot for an hour or two, or longer, will invariably be discolored. The longer it is kept hot, the darker it will be.—ED.]

CONVERSATIONS WITH DOOLITTLE

Continued from page 9.

or those produced from queens reared from an imported mother, allowing these queens to mate with whatever drones there were in and about the apiary, as such crossing would give additional vigor to an already vigorous race of bees.

“Allow me to sum up this matter briefly from a standpoint covering a period of nearly forty-five years: Except for the breeding of queens for market, I would say, first have your queens mate with drones as distantly related to your queen mother as possible; second, use queens as closely related to imported Italian stock as possible, where working for extracted honey, for there are no bees in the world, in my opinion, that excel those one generation from imported stock for large yields of extracted honey. Third, where white capping of combs becomes one of the great objects to work for, as is the case where working for section honey, choose the golden Italians on account of their qualities in that direction. These bees are in no way second to Italians from imported stock as to their honey-gathering qualities. They simply use, of that gathered, only enough to give the nice white cappings required when producing *fancy* section honey.”

Our Homes

A. I. Root

Let him that thinketh he standeth take heed lest he fall.—I. COR. 10:12.

Create in me a clean heart, O God, and renew a right spirit within me.—PSALM 51:10.

He that ruleth his spirit is better than he that taketh a city.—PROV. 16:32.

Every little while I get to thinking I have got past at least *some* of my weaknesses of early life, and that I am now, in advanced age, making a pretty good record as a citizen and as a Christian; but it almost seems sure, after such reflections, that Satan gives me another pretty severe "tussle." I think that one of my experiences of recent date may be helpful to some of you.

This is the third winter I have been running the Sears automobile I have told you about, and it has given me more satisfaction during the past six weeks than ever before. It has not been to the shop once, for Wesley and I have been able to make all repairs needed. After standing untouched during the whole summer, with gasoline left in the tank, it started right off promptly.

Now, while the *machine* has been all that could be desired, the compound pump sent with it, for pumping up the tires, has been giving a lot of trouble. It has for some time failed to pump up the tires *real hard*. Ernest always scolds because I let my tires get down so soft. I tell him there is less "jolt" in riding; but he maintains (and justly) it is harder on the rubber tires, and takes more power. In turning corners it is also much harder work if a tire is partially flat, because a larger surface has to twist round on the pavement or sandy road, and this twisting also wears the rubber tire much faster. First, oil worked over into the small rubber air-tube of the pump, cutting the rubber so it clogged. A big wire pulled through several times removed two bits of rubber. Then I had trouble and worry in finding how to get the double cylinder apart. When I finally got at the plunger, one leather was worn through. Each time I found some defect I was "dead sure" I had remedied the trouble; but each time the pump failed to push up the tires *good and hard*. This pump that cost enough to do the best kind of work puzzled me, so I lay awake nights thinking about it. Why not take it to a garage? There are several reasons. We have a garage of our own in Medina, and I have been in touch with mechanical work all my life, and it hurts me to give up beaten. Very likely there is *some* foolish pride right along here.

It was my 74th birthday, but I had forgotten it at the time. I had worked in vain at the

pump the day before, and was at it again until nearly noon. My nervous hands were covered with black grease, my back ached, and I was conscious I was getting in a bad frame of mind. That "alarm bell" was getting louder and louder. I was vexed and impatient. I didn't want any dinner, nor any nap before dinner. On this day *particularly* it was incumbent on me to be pleasant and smiling to Mrs. Root when I sat down to the dinner that she had taken unusual pains in preparing. A drinking man once said to me, "Mr. Root, I am on a horse I can't manage. When he goes I have to go." I told him that "horse" would land him in a *drunkard's* grave, and it did, not long after. As I struggled with that rebellious spirit I wondered if I, A. I. Root, was not in danger of being in a like predicament. Suppose a visitor or a group of visitors should call as they do almost every day, wanting to see and shake hands with the author of the *Home papers*. The thought of it almost made the chills run down my poor tired back. I rushed to my little room upstairs in our home where I take my day-time naps, and tried to sleep, but sleep wouldn't come. I had not yet "let go" of the pump, and, in fact, I could not get it out of my mind. I jumped out of bed, knelt down as I have done many times before, when, all at once, that wonderful prayer, that *beautiful* prayer of David's, occurred to me, and I prayed, "Create in me a clean heart, O God, and renew a right spirit within me."

Were ever words before framed to fit so exactly such a case as mine? I said mentally, "Now I can sleep;" but Satan was not ready to give up just yet. I remember thinking the prayer was not going to do any good, after all, *this* time. Let me pause right here. Unbelief and doubt are the result and a part of *all* sin. They go along together. But now listen: In spite of my *still* cherished rebellious thoughts and unbelief, the dear Savior, with his great patience and infinite love, had mercy on me.

In his arms he'll take and shield thee;
Thou wilt find a solace there.

That is just what happened. Oblivion came—blessed oblivion! My troubles were forgotten—wiped out. In half an hour I awoke, "clothed and in my right mind," and went down to dinner praising God, and the good wife who had provided such a beautiful birthday dinner.

In the afternoon I discovered the leather I was using was too thick and hard. In

this kind of pump, where the plunger takes the place of valves also, a very thin soft yielding leather is needed, and in a little time the pump was sending out a stream of air *for certain*, and with force enough to make every rubber tire on each of the four wheels "stand up" so only a very small spot, comparatively, touched the cement floor; and when turning corners, especially on hard-surfaced roads, but a touch on the steering lever is all that is needed.

There is a great lesson for poor frail humanity in our last text. Great rulers and great generals must, as a rule, first learn self-control before they can expect to be chosen for important offices. One who

allows himself to push ahead when he is vexed and impatient,* as I did, is a poor specimen of Christian, to say nothing more. I kept thinking I would have it all right in a few minutes, until I was too tired and nervous to do *any* thing well; and my old arch enemy saw his chance. While I think of it I thank God that it was only an inanimate object that I was vexed with, and not any fellow-traveler in this world of sin. I also thank God that, when I realized my "armor" had dropped off, and seemed to be lost, I made haste to apply to "the Lamb of God that taketh away the sin of the world."

Poultry Department

"THE HIGH COST OF LIVING—FOR CHICKENS," AND SOME OTHER MATTERS.

The above has been on my mind a good deal for some time past, and Mrs. Root and I have had some "jangles" about it because, as she insists, I tell all the pleasant things about chickens and say but little about the cost (especially down here) of wheat, corn, and oats. I am paying now for each 100-lb. sack \$2.15, \$1.95, and \$1.90. I could buy a little cheaper in quantities, say in the city of Tampa, but I could not readily turn my eggs every day as I do at the grocer's toward my grain, which is delivered as I need it right to my granary in the center of the "convergent poultry-yards." But before we get down to "figures" let us read the letter below from a good brother who seems to be "worried" in regard to the matter:

Mr. A. I. Root:—I have been reading your Poultry Department in GLEANINGS for some time; but there is one important thing that I should like to know. What is the average cost of feeding a hen for a year? I have heard that \$1.25 or \$1.50 will do it, but Green's *Fruit Grower* says that a healthy hen will eat \$3.65 worth of grain in a year. If that is true I will get rid of my chickens, for there is no profit in them at those figures. I rely on your telling us in GLEANINGS.

Cokeville, Pa., Nov. 21.

JOHN MAJOR.

If Green's *Fruit Grower* said as above, without any qualification, I should say they were careless, to say the least. It is possible that a large hen, laying 200 or more eggs a year, shut up (say on the Philo plan), and having little but grain, and the grain bought in small lots at the grocer's (at a big price), *may* eat a cent's worth a day; but I am sure not on the average. Look up the reports of our egg contests in the different States, and see what they have published in regard to cost of feed.

Our own chickens have a range of about five acres (if they care to go so far), and my feed bill with Buttercups and Leghorns for *grain* (wheat, corn, and oats) is only about $\frac{1}{4}$ of a cent a day, and this result was obtained where the grain was in galvanized tubs when they all helped themselves all day long. With my flock of 80 hens and ducks, half a dozen eggs (40 cts. per dozen at the grocery), 20 cts., paid for grain for the whole flock. Now, before a lot of you rise up in protest, listen. We buy oats every day; get lettuce and cabbage not fit to ship; provide Bermuda grass "pasture," and last, but *not* least, give them nearly all the ground bones and meat they care for, and the "chicken bones" are *given* me at the combined grocery and meat market in consideration of giving them our trade. A half-dozen eggs pays for all *cash* outlay. If you get three dozen eggs a day, which is certainly a very moderate estimate, you have a dollar clear every day for properly caring for your fowls.

Just one thing more. If the droppings from the roost are cleaned up every day they are, down here in Florida (where stable manure is \$3.00 a load), worth quite a little.

Somebody may ask if it is not pretty extravagant to provide five acres of "run" for 80 ducks and chickens. Yes, it is; but the five acres cost me only \$150 per acre, and just *now* the assessor appraised them at \$400. Then comes the question, "Why not raise grain or something else for chickens on this idle land so as to avoid these

* Giving way to nervous impatience, especially when assisted by drink, is probably the cause of a lot of the murders, followed by suicide, that are now chronicled in almost every issue of our daily papers. When Satan gets his victim well started he crowds him ahead with relentless haste, making the most of his opportunity.

expensive grain-bills?" I have for years been searching among "God's gifts" (for the people here in Florida) for something that will grow here and take the place of grain. May God be praised, for my search has been rewarded; and may he be thanked, also, for our Department of Agriculture that helped me to get it. Listen:

Just before going back north last April my good friend Banmehr, of Manatee (a beekeeper), gave me some canes and roots of cassava, and told me to plant them, saying that the roots were "good for chickens," etc. Now, to illustrate how we often neglect and pass by some of God's most precious gifts (sweet clover?) I shall have to own up that, after throwing the roots to the chickens, and finding they didn't seem to notice them, I let the canes lie around uncared for until Wesley said he knew how to plant them, and so he cut them up and planted perhaps a dozen pieces that looked about like corncobs. When we were planting dasheens the cassava was just peeping above the ground, and I told Wesley he might as well chop them off, as I didn't believe they were of any use. Well, either Wesley didn't hear or he didn't get around to it for some reason, and I forgot all about the cassava until we got here a few days ago, when all at once I said:

"Why, Wesley, what are those great branchy *trees* down among the dasheens?"

"Why, Mr. Root, that is the *cassava*."

"Do you mean they have made all that growth in the past six months?"

By my direction he dug some roots as big as my arm, and a yard long or more. After taking some pains to teach the chicks, they soon ate them with avidity—no cutting up nor any preparation needed. Then I sent to Washington for a bulletin (No. 167) which I recalled having seen. Let me give you some clipping from said bulletin:

If the entire crop is not wanted for use during the winter following its growth, a part of it may be left in the ground for another season, as the roots will continue to grow several years if not disturbed. Roots which have grown two or more seasons often reach an enormous size, sometimes as much as 8 feet in length, and forming clusters weighing more than 100 pounds; but they become more hard and woody than at the end of the first season, and so are not as good for the manufacture of starch or for feeding as those which have grown only one season. When it is known beforehand that a part of the crop is to be kept until the second season, it is better to dig alternate rows, so that the plants remaining will be less crowded.

MEANS OF REMOVING FROM THE GROUND.

As the roots are of considerable size, often from 3 to 4 feet in length by 2 or 3 inches in diameter, and as they grow in clusters of from 4 to 8 on each stalk, a single cluster often weighing from 20 to 30 pounds, digging can not be done with a plow, as sweet potatoes are dug, but must be done by hand.

FOR WGS

Dr. Stockbridge states, in Bulletin No. 49 of the

Florida Experiment Station, that when five lots of pigs were fed a period of seventy-five days, cassava gave a greater net profit and a greater percentage of gain in weight than did either corn, chufas, or peanuts, and a greater net gain in weight than did any except corn. The cost of the increased weight of the cassava-fed pigs was only 1.04 cents per pound, while the increase of the corn-fed pigs cost 3.06 cents per pound. In these tests the cassava was charged to the pigs at the rate of \$6 per ton and the corn at 60 cents per bushel, these prices being somewhat more than the actual cost of growing the cassava and less than the usual market price of corn in Florida.

FEEDING TO POULTRY.

In localities where it is grown, cassava is used more commonly than corn in the feeding of poultry. It needs no preparation before feeding, as the roots are so tender that they can be eaten readily, and poultry eat them as greedily as do other kinds of stock. When fed alone cassava makes hens so fat that they do not lay well, as is the case when they are given an exclusive corn diet, so it is better to mix it with wheat, oats, or some similar nitrogenous feed. It is unsurpassed when fowls are to be fattened for market, as it makes a rapid increase in weight with very little expense.

One poultry-raiser at Orlando, Fla., who keeps from 500 to 700 fowls, states that he has fed cassava since 1885, and that it is the most inexpensive as well as the most satisfactory feed he can find for use in the place of corn, though it is not so complete a food as is needed by growing chickens and laying hens. Others who have used it for feeding poultry make similar statements; and it is the general experience that, when it is used as the principal food, from one-third to one-half a feed of wheat or oats should be added to the ration, and that the feeding of cassava saves fully one-half the usual cost of corn.

Our cassava is growing on ground that was for several years a chicken-yard. As it is desirable to change yards, a very limited piece of ground will grow the roots, and, after well started, the chickens may be let into the yard again. If I were to try to grow grain of any kind a horse would be needed. While it is a very small job to prepare and plant cassava by hand, and the harvesting for chickens is nil, as the great roots grow just under the surface, and the spreading branches soon keep down all weeds, and even Bermuda grass gives up trying to grow under rank cassava, the roots are almost equal to Irish potatoes for table use.

Mrs. Root will scold if I stop here without telling the other side, so here goes:

"THE OTHER SIDE OF POULTRY" IN FLORIDA.

It is the long wet summers, especially for those who live here only in the winter time. If you will turn back to p. 356, May 15, 1913, you will see that, when I left for Ohio, I had 125 chickens, none over four months old, and about 25 ducks; 150 fowls in all. I offered a neighbor all the duck eggs and all the roosters when they were big enough to sell for looking after them during the summer. I to pay all the feed-bills. What did the feed cost for the six months? Just about as many "dollars"

as I had ducks and chickens when I arrived here in November. When I left in April I had a credit of about \$38.00 at the grocery. It took all this and almost as much more to feed roosters and all. Sorehead or some similar trouble took off a dozen or two, and "varmints" a few more. Laying hens could be left with neighbors cheaper, it is true; but a lot of "youngsters" are "no good" for eggs, and often a "heap" of trouble. It would have been as cheap or cheaper to have "sold out" in the spring, and bought more in November; but who wants to sell young pullets just beginning to lay? Another thing, I wanted my especial cross of Buttercups and Leghorns. If I stayed here the year round, like neighbor Abbott, it would be much cheaper; but even he (who has several hundred laying hens) begins to think bees rather more profitable. They don't need corn, and seldom need sugar. While I think of it, neighbor Ault (the man among the big dasheens) in some of his apiaries here near Bradentown secured last season about 200 lbs. per colony. But this was an apiary of only about 25 colonies.

Just a word more about the chickens. I think our Experiment Stations find the large breeds need *more* grain than the Leghorns; but, if I remember, in one egg test the Rhode Islands Reds came very near taking the prize, and neighbor Ault says he had a flock of reds that, while they had access to a field of *alfalfa*, gave a big egg yield and had almost no grain at all. This reminds me that three laying hens, Rhode Island Reds, were kept all summer just for their eggs; and while eggs were 50 cts. a dozen in November I several times had an egg from each red hen. Let us go back to that letter from friend Major before closing.

Friend M., let us suppose you have no lettuce, cabbage, nor even a field of *alfalfa*, and that it does cost a "whole cent" to feed your hen one day. If she lays an egg that is worth *four cents* in the market, *or more*, can't you stand it?

DO THE HIGH-SCORING CHICKENS AT FANCY PRICES GIVE US THE BIG-LAYING STOCK?

An effort has been made to show that our great layers in the "egg-laying contests" are the outcome of the high-scoring standard fowls; but here is something that does not exactly agree if I understand it correctly. The clipping is from the *Pacific Poultryman*.

Another claim to the world's championship for egg production has just been put forward. Professor Dryden, of the Oregon Agricultural College, gives a record of 291 eggs in a period of one year by a hen of mixed blood, owned by the college, which he claims is the best performance in the world to date.

I need hardly add that we have probably no better authority than Prof. Dryden. The above hen was probably a first cross, and, very likely, from standard breeds. See p. 624, Sept. 1.

GRASSHOPPERS AS A SUBSTITUTE FOR MEAT SCRAPS FOR POULTRY.

In the *Ladies' Home Journal* for November is a letter from a widow who did wonderful things with poultry by feeding them grasshoppers that she trapped, and then killed with formaldehyde. The account does not tell where she lives, but it says she trapped "eighty odd bushels" in two weeks, and she says it answers the place of ground bones or meat scraps wonderfully well. I confess that several times when I read of the grasshopper scourge in the Southwest I wondered if they could not be killed and dried so as to be preserved for winter rations for poultry. Can any of our readers tell us whether the above is fact or fiction?

MUSTARD FOR CHICKENS AND MUSTARD FOR TABLE USE; WHERE ARE THE MUSTARD-FIELDS?

I see in one of A. I. Root's articles he mentions receiving a barrel of ground mustard for his chickens. Now, I should like to know if mustard is grown anywhere in the United States in a commercial way; and if so, could there not be a way to get in communication with the growers, and order from them?

Town Line, N. Y., Oct. 15. J. H. CALKINS.

Perhaps The French Co., of Rochester, N. Y., who advertise mustard for poultry, can tell us where the seed is grown, that beekeepers may locate near the mustard-fields, to the advantage of the grower as well as that of the beekeeper.

BANEFUL DRUGS; A WORLD-WIDE WAR AGAINST THEM.

Another evidence that God's kingdom is coming on earth is that the nations of the world are uniting in a war against opium and other baneful drugs. See the following, which we clip from the *Cleveland Plain Dealer*:

Dr. Wright reported that up to date thirty-five governments have signed the opium convention, including the thirteen nations that joined in the first conference in Shanghai after the movement had been initiated by the United States. Some of these countries, notably Great Britain and Germany, are withholding their ratifications until the last moment, taking the ground that to be really effective the convention must have the unanimous support of all nations. So far twenty-six governments have agreed to deposit their ratifications, and they probably will be received at The Hague before December 31 next.

All of the signatory powers are to meet at a third conference at The Hague after December 31, next, to agree upon the date when the prohibition of the use of opium and other baneful drugs shall go into effect throughout the world.

High-pressure Gardening

DASHEEN—MORE ABOUT THOSE IN THE PICTURE, p. 784, NOV. 1.

When neighbor Ault was digging that big hill of $2\frac{1}{4}$ lbs., I picked up one of the long leaf-stalks he cut off, and took it home to see if that would make a soup or stew as good as the little shoots. I took it, leaf and all, and Mrs. Root used the whole thing for soup, and it made about the best dish of dasheen we have had. Of course we peeled off the outside covering near the ground. Just think of it, friends! Suppose you could take a tall stalk of corn that had given a big crop already, and make two or more good meals of one "cornstalk!"

I have mentioned the fact that he used lime as well as stable manure. Well, he has just given me an additional fact in regard to his astonishing yield. When he came on the place he found a heap of little shells his predecessor gathered for some reason or other. Having no use for them he used them for stable bedding. After the horse had tramped them up fine he shoveled the manure and all around the dasheen. I wish our experiment station would tell us if these mashed shells might have had any thing to do with this enormous growth of the dasheen.

DASHEEN DATA—DASHEEN IN OHIO, ETC.

Dasheen purchased from the Brooksville Development Co., May 1, 1913, arrived and were planted May 10 on different kinds of ground. All grew and were up June 1. Dasheens planted on clay soils failed because of lack of moisture. One hundred and fifty tubers planted on sandy black loam did exceedingly well. Dug first mature tubers from them Sept. 1, 1913. They were entirely matured Sept. 15, dug on that date, the yield being six pecks.

None of these received irrigation; those receiving irrigation were frozen Sept. 22, 23, unmatured.

The average height of plants was forty inches; number of leaves about twelve. Dasheen planted here on suitable ground, and given ordinary cultivation, will mature.

Cederville, Ohio.

HARRY POWERS.

The above, with sample tubers, was submitted to the Department of Agriculture, and below is their reply:

Mr. Harry Powers:—Your letter of October 14 and the package of dasheens was received several days ago, and we desire to thank you heartily for the same. I have tested a few of the tubers on my table, and find them of very good quality. The quantity of tubers which you secured would hardly warrant your continuing the culture of the dasheen in Ohio, from the commercial standpoint especially, as the corms and tubers are very small; but if by irrigating and fertilization in the first half or two-thirds of the season you could stimulate the growth of the plants, you might obtain a considerably more satisfactory yield. It would be, of course, necessary to withhold water toward the close of the season, in order to allow the tubers to ripen. I may add that stable manure is probably the best form of fertilizer used.

I have to thank you again for sending us your

report, and to congratulate you on the degree of success which you have attained. A smaller number of plants started indoors a month or more earlier, and then set out, would no doubt give a yield as large or larger.

R. A. YOUNG,
Washington, D. C., Nov. 5. Scientific Assistant.

Permit me to suggest that the irrigated tubers that did not mature would have made an excellent stew, as I have several times described, and we prefer this stew of immature tops and tubers to any other way of cooking the dasheen. In regard to yield, on our Medina stiff clay soil we had about three bushels of tubers from 50 plants, some of them very small indeed. Now hold your breath and listen: I have just been over to neighbor Ault's, and saw the corm and tubers from one of his best hills (see picture on p. 784, Nov. 1). After being dug and washed there were $2\frac{1}{4}$ lbs., the product of one small shrunken tuber, in just about 8 months from planting. Besides a good dressing of stable manure, Mr. Ault says he sowed about a peck of lime and worked it in on his patch of little more than a rod square. It may transpire that, like the clovers, lime is the thing. One more valuable thing about the dasheen: Unlike the Irish potato, light, and even strong sunshine, improves the tubers instead of doing injury.

We clip the following from the *Manatee River Journal*:

That the dasheen is a coming food product of Florida is borne out by reports made by parties who have been experimenting in growing it. Mr. A. I. Root, of Medina, Ohio, who spends his winters in Bradenton, and has just recently returned, dropped in a few days ago and showed us a letter from Mr. Young, of the Department of Agriculture, and called attention to articles from Bradenton upon the dasheen in his paper *GLEANINGS IN BEE CULTURE*. The following is the letter:

Mr. A. I. Root:—I have recently returned from a trip to Hawaii, California, and the Southern States, to study the taro and the dasheen. I find your letters of July 21 and July 22, with proof-sheets of your articles on the dasheen. I wish to thank you for these and the continued interest you are taking in the introduction of this vegetable, which we believe will eventually prove of much value, especially in the Southern States. * * * I was in Bradenton early in October, and was greatly pleased with the dasheens grown by your neighbors, Mr. Harrison and Mr. Ault. They were the best I had seen up to that time, outside of our own planting at Brooksville, though the next day I saw a three-acre commercial field a few miles from Tampa that had made a remarkable growth. This was in muck soil that had been previously used for trucking.

R. A. YOUNG, Scientific Assistant.
Washington, D. C., Nov. 7.

In the November issue of *GLEANINGS* a letter and a half-tone picture of a mammoth dasheen is a contribution from Arthur E. Ault, of Bradenton. The plant pictured was between six and seven feet high, and he says the soil upon which they grow is a well-fertilized humus-filled sand, and that he ridged the soil with furrows six feet apart, planting two rows

of dasheens to each ridge. He says the soil is moist, and there has been water in the furrows nearly all summer, and tubers were then forming rapidly. Mr. Root adds that dasheens are fair eating before maturity, but not at their best until fully matured, although the young shoots and tender leaves are all right, and make a good substitute for mushrooms or oysters, with a few crackers added.

As experiments indicate that the dasheen is going to prove prolific in South Florida soil, information about it is interesting at this time, though limited to experimental planting.

Later.—A mammoth dasheen is on exhibition at the office of Messrs. Wyman & Green, the largest that we have had the pleasure of inspecting. It is true that we have seen only two, the other being the one that was recently placed on exhibition at the *Journal* office; but this one is so large and well developed that we conclude it must be the limit. The hill weighed $19\frac{1}{2}$ pounds when first taken out of the ground, and removing the small tubers it weighed $17\frac{1}{2}$ pounds. They were grown by the Mr. Ault already mentioned. The largest before reported was 18 pounds grown up near Brooksville at the Government plant.

Mr. Ault's yield of dasheen, as given above, would be just about *1000 bushels per acre*, which is more than the Department of Agriculture has ever mentioned, even on small areas. Perhaps I should explain that he put on the plot quite a liberal dressing of stable manure which his chickens scratched into the ground quite thoroughly. He also worked ashes in between the rows. Aside from its great value as a table vegetable, it will probably be valuable for stock. Our chickens eat the large center corms with avidity. Mr. Ault's place is just over the fence from our own five acres.

The dasheen grown here on our place needs no sal-soda nor soda of any kind (to counteract the "acidity" mentioned), either in washing or cooking. The tubers for baking need only a brushing with a stiff brush before they are put into the oven, and for stews the stalk and stems, with small green tubers, need only rinsing and pouring the water off, as mentioned on p. 740, Oct. 15.

DASHEENS IN THE GREENHOUSE OR IN A BOX IN A WINDOW.

Our friends who are anxious to test the new food-plant can start them any time in the winter as they do tomato, cabbage, and other plants; and when spring comes, put them out when danger of frost is past. As they will grow with proper care higher than your head, they need a long season. Remember they are delicious food from the time they are an inch high until they are above your head, and every bit of the plant is edible, both above ground and under ground. My impression is, after the tubers are well seasoned they can be mailed safely all winter. We are testing the matter now, and will report. I hope some seedsman or some one else will soon advertise them by

parcel post. I mailed 3 lbs. to Medina, and below is Huber's report in regard to them.

The package of dasheens reached me safely yesterday morning. No danger of any frost, for the weather has been very warm here for the last week or so. We baked some to-day. I ate five, and we all liked them very much. They remind me of roasted chestnuts, although a little drier, and flavor somewhat less pronounced.

ROSELLE, ANOTHER OF "GOD'S GIFTS."

Some time in the summer our good friend Reasoner, of the Royal Palm Nurseries, Oneco, Fla., sent over to our place about a dozen Roselle plants which Wesley planted and cared for until we arrived in November, when we found them covered with "fruit." You might not call it fruit by the look; but we recently had cranberries and roselle both on the table at once, and, although they taste and look very much alike, I much prefer the roselle. I am sure they can be grown in the North if started in a greenhouse like tomatoes, for some of our plants are full of fruit when less than a foot high. See clipping below from the *Florida Grower*.

Roselle, or Jamaica sorrel, or lemonade plant, as it is often called in Florida, is one of the hibiscus family. The flowers are solitary with a red and thick calyx. These calices, when cooked, make an excellent sauce or jelly, almost identical in flavor and color with the cranberry of the North. The leaves make an excellent and refreshing drink. It is hardly necessary to give recipes for the above. The calices are removed from the ovary and used in the usual way, same as northern cranberries. A salad may be made of the stems, leaves, and calices just as a turnip salad. A syrup that can be used for coloring purposes can be made of calices or stems and leaves, boiled in the ordinary way and sealed in bottles for future use. To make the jelly, use less than the ordinary proportion of sugar; it is excellent for cake, but is not as firm as guava jelly.

I think you can get seed, and perhaps plants, of Reasoner Bros., Oneco, Fla. If you want to know about the wonderful fruits and plants that can be grown in Florida write for their beautiful new catalog.

SHALL WE WIN BY "FIELDS OF BLOOD" OR BY THE "SWEAT" OF "HONEST LABOR"?

Here is an extract from an Armenian paper which states a truth that those who clamor for vast armaments should try to absorb into their belligerent minds: "It is an old and dead belief that a nation is as strong as the powerful army she possesses, and that she is as vital as her cannon is large. The fate of nations is built, not on the field of blood, but on that of sweat. It is formed in factories, in the depths of mines, on farms, in temples of art and science, through reformed and just administration, through the creative desire which runs after perfection, and which leads the nations toward moral greatness and material prosperity."

A hearty AMEN to the above, which we clip from the *Farm Journal*.

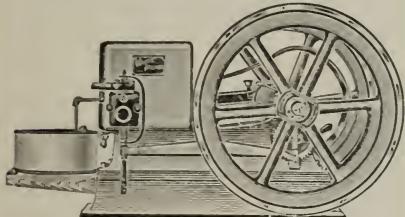
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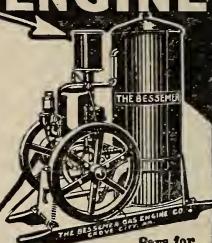
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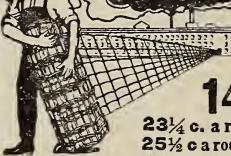


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NEW BINGHAM BEE SMOKER

Patented

The New Bingham Bee Smoker

leads the procession in improvements, such as metal legs, turned edges, metal binding on bellows, new spring on the valve of the bellows; self-cleaning creosote-burning cover sets on inside of fire-pot. . . . Try one this season.

Smoke Engine, 4-inch stove, \$1.25
Doctor, 3½-inch stove, 85
Conqueror, 3-inch stove, 75
Little Wonder, 2½-in. stove, 50

Two larger sizes with metal legs and hinged cover, in copper, 50c extra.

Parcel-post shipping weight, 2lbs. each.
For sale at your dealers or direct.

A. G. WOODMAN CO.
GRAND RAPIDS, MICH

PAINT WITHOUT OIL

Remarkable Discovery that Cuts Down the Cost of Paint Seventy-five Per Cent.

A Free Trial Package is Mailed to Every One Who Writes.

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather-proof, fire-proof, and as durable as oil paint. It adheres to any surface, wood, stone, or brick, spreads and looks like oil paint, and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 8 North St., Adams, N. Y., and he will send you a free trial package, also color-card and full information showing you how you can save a good many dollars. Write to-day.

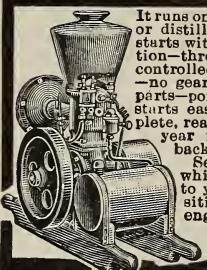
BETTER LIGHT from KEROSENE
Beats Electric or Gasoline
TEN DAYS FREE
SEND NO MONEY

Without sending a cent you can use this wonderful, economical oil light 10 days Free, then return at our expense if not satisfied. Gives powerful white incandescent light, burns over 50 hours on one gallon Kerosene (coal oil). No odor, smoke or noise, simple, clean, won't explode. Guaranteed. We want one person in each locality to refer customers to. Write for 10-DAY FREE TRIAL. **AGENTS OFFER**—agents' wholesale prices **WANTED** and learn how to get **ONE FREE**. Make money evenings and spare time. One farmer cleared over \$500 in 6 weeks. Exclusive territory given.

MANTLE LAMP CO., 350 Aladdin Bldg., Chicago, Illinois

BROWN FENCE
Direct from factory, freight prepaid, ever 150 rods for every purpose, all Double galvanized, 18c per rod up. New Barn Fence, 15c per rod, test, **ALL FREE**. Mail postal NOW, to THE BROWN FENCE & WIRE CO., Dept. 91, Cleveland, Ohio

20 Reasons Why You Should Investigate the SANDOW Kerosene Stationary ENGINE



It runs on kerosene (coal oil), gasoline, alcohol or distillate without change of equipment—starts without cranking—runs in either direction—throttle governed—hopper cooled—speed controlled while running—no cams—no valves—no gears—no sprockets—only three moving parts—portable—light weight—great power—starts easily at 40 degrees below zero—complete, ready to run—children operate them—5-year ironclad guarantee—15-day money-back trial. Size 2 to 20 horsepower.

Send a postal today for our catalog which shows how Sandow will be useful to you. Our special advertising proposition saves you one-half cost of first engine sold in your county.

Detroit Motor Car Supply Co.
72 Canton Ave., Detroit, Mich.



Large Eggs

now and all winter, too, if you feed your hens The Humphrey Way—fresh bone prepared in a

HUMPHREY BONE CUTTER with its Always-Open Hopper. If you have 10 hens or more, write for our offer and a copy of our profitable book, "The Golden Egg."

HUMPHREY, MINE ST. FACTORY, JOLIET, ILL.

10 Days' Free Trial

for you to prove that all kinds of meal, cobs or corn, can be ground the fastest and finest on

QUAKER CITY MILLS

We pay the freight. 23 styles—hand power to 20 h. p. Write for catalogue, also for barrels in farm supplies. The A. W. Straub Co., Dept. R, 3748-50 Filbert St., Philadelphia, Pa., Dept. G, 3703-11 So. Ashland Ave., Chicago, Ill.



GIVEN to every boy and girl. We give a fine Eureka Camera and complete outfit, plates, chemicals, etc., with full instructions. Just send your name and address, we send you 24 papers Gold Eye Needles. Sell 2 papers for 1c., giving a Thimble free. When sold send us the \$1.20 and the Camera and complete outfit is yours. Address **GLOBE CO., Dept. 725, Greenville, Pa.**

Classified Advertisements

Notices will be inserted in these classified columns at 25 cents per line. Advertisements intended for this department can not be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the Classified Columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

See our special sale of honey on advertising page 11 of this issue. THE A. I. ROOT CO., Medina, O.

Bronzed honey labels, 1000 for 80 cts.; others, 60 cts. per 1000. PEARL CARD CO., Clintonville, Ct.

FOR SALE.—White-clover honey, thoroughly ripened; A1 quality. E. C. PIKE, St. Charles, Ill.

FOR SALE.—Choice extracted honey in new 60-lb. cans at 9 cts. per lb. J. P. MOORE, Morgan, Ky.

FOR SALE.—Tupelo honey, barrels and cans. Fine and white. Same up to 10 cts. I. J. STRINGHAM, 105 Park Place, New York.

FOR SALE.—Finest quality clover and buckwheat honey in 60-lb. cans. C. J. BALDRIDGE, Homestead Farm, Kendalia, N. Y.

FOR SALE.—White-clover honey in 60-lb. cans. Ripened on the hives. There is nothing finer in every respect. J. F. MOORE, Tiffin, Ohio.

FOR SALE.—Several tons of raspberry-milkweed honey (most milkweed) in new 60-lb. cans (two in case), a very fine honey. Write for price. Small sample free. P. W. SOWINSKI, Bellaire, Mich.

FOR SALE.—White-clover honey, none better. In 10-lb. pails, six in a case, at \$6.50 per case; 5-lb. pails, 12 in a case, at \$7.00 per case; ½-lb. glass jars, 24 in a case, at \$2.80 per case. Sample, 4 cts. Also in 60-lb. cans, very nice amber honey.

HENRY STEWART, Prophetstown, Ill.

Buyers of honey will do well by sending for the January numbers of *The Beekeepers' Review* containing the name and address of over 100 National members having honey for sale. It is free for the asking. THE BEEKEEPERS' REVIEW, Northstar, Mich.

FOR SALE.—Blended raspberry, buckwheat, and goldenrod honey; has a thick body and a strong and very rich flavor. Put up for sale in new 60-lb. tin cans. Price \$5.00 a can. Sample by mail, 10 cts., which may be applied on an order for honey.

ELMER HUTCHINSON, Pioneer, Mich.

HONEY AND WAX WANTED

WANTED.—A limited quantity of choice, white, extracted honey. H. C. AHLERS, West Bend, Wis.

WANTED.—Comb, extracted honey, and beeswax. R. A. BURNETT & CO., 173 So. Water St., Chicago.

WANTED.—Comb honey and beeswax. State what you have and price. J. E. HARRIS, Morristown, Tenn.

WANTED.—Honey, extracted and comb. Will buy or handle on commission. Beeswax—will pay highest price. HILDRETH & SEGELKEN, New York, N. Y.

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Full line of Root's goods at factory prices. E. M. DUNKEL, Osceola Mills, Pa.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. CO., Greenville, Tex.

New crop of extra-fine quality alfalfa seed, \$7.00 per bushel sacks, 25 cts. extra; also some sweet-clover seed. R. L. SNODGRASS, Augusta, Kan.

FOR SALE.—Empty second-hand cans, two cans to the case; good as new; 25 cts. per case. C. H. W. WEBER & CO., Cincinnati, Ohio.

First check for \$6.00 buys Root German wax-prese, used very little. F. W. VANDEMARK, Stillwater, Okla.

FOR SALE.—Redwood hive-bodies, empty, 10 L. frames, 25 cts. each, and reinforced comb foundation. J. E. LAWRENCE, 326 Clay St., San Francisco, Cal.

FOR SALE.—Better hive for less money. Beekeepers' supplies and standard-bred Italian bees. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

FOR SALE.—One check-protector, a device for protecting commercial paper. Will be useful in business houses. Will sell at far below cost. Correspondence solicited.

MRS. W. Z. HUTCHINSON, Flint, Mich.

FOR SALE.—Root's goods and Dadant's foundation at factory prices, F. O. B. Pacific Coast points in quantity lots. Smaller lots in proportion. Write us, stating your wants.

SPENCER ARIARIES CO., Nordhoff, Cal.

Beekeepers! On Jan. 1 there will appear on the market a new double-walled hive which is different in several respects from any other hive heretofore offered to the public. Write for description, photo, and prices. The catalogs will be out soon, and one will be mailed to all applicants free.

L. F. HOWDEN MFG. CO., Fillmore, N. Y.

REAL ESTATE

FOR SALE.—64-acre farm, finely located near State road. Good buildings, soft water. Apple orchard and two acres of raspberries.

J. M. OVENSHIRE, Dundee, N. Y.

Virginia Orchards pay handsome profits. Good fruit lands in the famous apple belt, \$15 an acre up. Easy payments. Send names of two friends interested in Virginia, and receive our beautiful magazine one year free. F. H. LABAUME, Agr'l Agt. Norfolk & Western Ry., Room 246, N. & W. Bldg., Roanoke, Va.

Escape the Cold Winters. Go South—buy farm land, prices \$15 an acre up, values rapidly advancing. Live stock, dairying, poultry, truck, beekeeping, and fruit are making farmers wealthy. Schools, highways, and living conditions the best. Climate very healthy. Promising industrial openings everywhere. Land lists, State booklets, and "Southern Field" magazine free. M. V. RICHARDS, Land & Ind. Agt. Southern Ry., Room 27, Washington, D. C.

WANTS AND EXCHANGES

WANTED.—To lease large apiary or work on salary. Have had experience in several States, and can furnish best of references. State salary or terms in first letter. JAS. D. ARVIN, box 237, Millinocket, Me.

FOR SALE OR TRADE.—A good residence property, modern except heat, with outside sleeping-porch. Good poultry-houses and runs. Delightful climate. For particulars address A. DEARMON, Cheyenne, Wyo.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1914. Our catalog and price list will be mailed to you free. Order early and get the discounts.

C. E. SHRIVER, Boise, Idaho.

BEES AND QUEENS

FOR SALE.—50 to 200 colonies, eight-frame, first-class. E. F. ATWATER, Meridian, Idaho.

Pure Italian bees or their hybrids, in L. 10 frames, wired, full foundation, 1 or 100.

JOS. WALRATH, Antioch, Cal.

FOR SALE.—70 stands of bees; also 1½ acres of well-improved land; good location.

WALTER CROCKETT, Middleton, Idaho.

California Golden queens produce the bright workers, equal to any. Tested. \$1.25 to \$2.50; mated, \$1.75; 12, \$8.00; 50, \$32; 100, \$60.

W. A. BARSTOW & Co., San Jose, Cal.

We requeen our bees every year to prevent swarming. We offer the year-old queens removed from these hives at 50 cts. each, \$5.40 per doz.; \$40.00 per 100, Italian stock, delivery guaranteed. Book orders now.

SPENCER APIARIES Co., Nordhoff, Cal.

Golden Italian queens that produce golden bees, the brightest kind, gentle, and as good honey-gatherers as can be found. Each: \$1.00; six, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00.

J. B. BROCKWELL, Malvern Hill, Va.

Phelps' Goldens combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; tested, \$2.00 and \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1.00; 6 for \$5.00.

WM. S. BARNETT, Barnett's, Va.

Queens bred from Moore's and Doolittle's best Italian stock. Untested, 75 cts. each; \$8.00 per doz.; \$60.00 per 100; tested, \$1.00 each; \$10.50 per doz.; \$80.00 per 100. Delivery guaranteed. Book orders now.

SPENCER APIARIES Co., Nordhoff, Cal.

GOOD QUEENS.—Good queens are a real necessity in any apiary if best results are to be expected. The old leather-colored three-band Italians have proven themselves to be the best general-purpose bees extant. These I can supply in any quantity you may wish. Untested, \$1.00 each; \$4.25 for six; \$8.00 per dozen. Safe arrival and satisfaction. All orders will have prompt attention.

E. J. ATCHLEY, Bloomington, Cal.

FOR SALE.—Italian queens and bees by the pound. Ready for delivery by April 1, 1914. Having over 600 colonies of bees and 500 nuclei from which to draw, we expect to fill all orders very promptly. For a number of years we have been constantly improving our stock with commercial queen-rearing in view. Now we are in a position to guarantee satisfaction to our customers. Give us a trial order. Write for prices, etc. BROWN & BERRY, Hayneville, Ala.

EARLY QUEENS.—Those who desire early queens can be supplied by sending orders to us. Only three-band Italians stand the severe test against diseases, and our bees are clean. Untested queens, \$1.00 each; \$4.25 for six; \$8.00 per dozen. Arrives safe arrival and satisfaction to everybody. If you desire queens in large lots early, better let us book you as soon as convenient, and money can be sent when queens are wanted. Your check is good, or any way you wish to remit. THE RIALTO HONEY Co., Box 73, Rialto, Cal.

Many men of many minds, but the minds of practical beekeepers are turned toward the old reliable three-band Italians. We have them in their purity, new blood, new importation. Untested queens from March to June, \$1.00 each; \$4.25 for six, or \$8.00 per dozen, safe arrival and satisfaction to all customers. Write for prices on large quantities. You do not have to return dead queens to us—just state it so on a postal card, and queens dead on arrival will be replaced promptly.

THE GOLDEN RULE BEE Co., Riverside, Cal.

POULTRY

Rhode Island Reds. Strong baby chicks for sale. Write me. E. O. WALTZ, Medina, Ohio.

LEGHORNS.—Eggs for hatching. S. C. W. Leghorn, \$5.00 per 100; \$1.00 per 15. Send for catalog. WOODWORTH FARM, Wilton, Ct.

S. C. White Leghorn, 15 eggs, \$1.25. Day-old chicks, 15 cts. each. Buff Wyandott, utility-stock eggs, per setting of 15, \$2.00. Day-old chicks, 20 cts. each. JOHN RIEDER, Medina, Ohio.

Indian Runner breeding-ducks laying now. Utility and exhibition stock (pure white eggs) sent on approval. DEROY TAYLOR, Box G, Lyons, N. Y.

FOR SALE.—Indian Runner ducks. Stock bred from first-prize hen and first-prize drake. Ohio State Fair. Fine birds, and unequalled egg-producers. Guaranteed birds at reasonable prices.

L. G. CARY, Trimble, Ohio.

PIGEONS

Pigeons! Pigeons! Thousands, all breeds; lowest prices; satisfied customers everywhere. Start with our \$\$\$-making Jumbo Squab-breeders. Large, free, instructive, illustrated matter.

PROVIDENCE SQUAB Co., Providence, R. I.

MISCELLANEOUS

FREE.—A useful New Year's gift sent prepaid to each beekeeper who sends his address on a postal.

J. B. HOLLOPETER, Penticton, Pa.

HELP WANTED

WANTED.—Apiarist for 1914. Comb honey, 200 colonies. State salary expected, and experience. Work to commence March 1. B. F. SMITH, Jr., Cowley, Wyo.

WANTED.—Experienced bee-men. Give age and experience in first letter.

W. W. FAIRCHILD, Heber, Cal.

WANTED.—A good queen-breeder; begin March 1 or sooner. Give full particulars in letter of application. W. D. ACHORD, Fitzpatrick, Ala.

WANTED.—A young man for the season of 1914 who wishes to learn the bee business. Users of liquor or tobacco need not apply.

J. G. WALLER, Idaho Falls, Idaho.

WANTED.—Help in an American apiary. Work the year round, and good wages to the right man. Man and wife preferred. H. H. ARNOLD, Trinidad Honey Co., Trinidad, Cuba.

WANTED.—Young single man, familiar with bee business, to help with supplies, honey, and queen-production. We furnish board and lodging. State wages wanted. THE PENN Co., Penn, Miss.

I could take two or three young men of good clean habits to learn beekeeping during the season of 1914; crop last year, 45,000 lbs. Board free, and something more if we both do well.

R. F. HOLTERMANN, Brantford, Ont., Can.

WANTED.—A sober, energetic young man as salesman to solicit the retail grocery trade, and to help case, grade, bottle, and pack honey for shipment. Some knowledge of and experience with bees required. Give reference. State age, and wages expected in first letter.

LATSHAW HONEY Co., Carlisle, Ind.

WANTED.—Experienced apiarist for coming season; man who is able and willing to work; extracted honey; wages \$60.00 per month and board for season. Give age, experience, and nationality, first letter. If you will work for us one season, and show your ability to handle bees, we will sell you a yard of bees on easy terms. SPENCER ARIARIES Co., Nordhoff, Cal.

POSITION WANTED

WANTED.—Situation in Florida. See ad. of Dec. 15. G. W. BABCOCK, Brockport, N. Y.

BEEKEEPERS' DIRECTORY

If you need queens by return mail send to J. W. K. SHAW & Co., Loreauville, Iberia Parish, La.

Nutmeg Italian queens, leather color, after June 1, \$1.00. A. W. YATES, Hartford, Ct.

Well-bred bees and queens. Hives and supplies. J. H. M. COOK, 70 Cortlandt St., New York.

QUEENS.—Improved red-clover Italians, bred for business. June 1 to Nov. 15, untested queens, 75 cts. each; dozen, \$8.00; select, \$1.00 each; dozen, \$10; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Boyd, Ky.

Quirin's famous improved Italian queens, nuclei, colonies, and bees by the pound, ready in May. Our stock is northern-bred and hardy; five yards wintered on common stands in 1908 and 1909 without a single loss. For prices, send for circular.

QUIRIN-THE-QUEEN-BREEDER, Bellevue, Ohio.

SPECIAL NOTICES

HOT-BED SASH.

This is the time of year to be getting ready for the early spring vegetables by providing hot-bed sash. We call attention to our choice cypress sash, which are made 3 ft. 4 in. by 6 ft. for four rows of eighteen-inch glass let into grooves, or rabbeted. Unless otherwise specified, we furnish grooved sash. A single one, K. D. \$1.00; 5 of the same in a crate, \$4.75; 10 for \$9.00. If put together, add 10 cts. each; and for each coat of paint add 10 cts.; 8 x 10 glass for same, \$2.80 per box of 90 lights; 5 boxes at \$2.60; 10 boxes or over at \$2.50.

SWEET-CLOVER SEED.

The demand for this seed is remarkably good, especially in Iowa, Kansas, and Oklahoma, where its value is best known. The supply of seed bids fair to be somewhat short of the demand again this

year. Because the seed continues to ripen for some weeks, the question of saving the seed is a difficult one, and those new in the business are apt to find the greater portion shelled off before they get ready to harvest it. What looks like a fine crop of seed early in the season may dwindle to small proportions by the time it is saved and hulled. We are prepared to supply choice seed at the following prices:

Melilotus alba, biennial	24	\$2.20	\$5.00	\$20.00
White sweet clover, hulled	17	1.50	3.50	13.00
Melilotus officinalis, biennial				
Yellow sweet clover, hulled	28	2.60	6.25	24.00
Yellow sweet clover, unhulled	21	1.90	4.50	17.00
Annual yellow, hulled	14	1.20	2.75	10.00

THE A. I. ROOT CO. REPRESENTATIVES FOR CANADA.

We have recently appointed the Charles E. Hopper Co., 185 Wright Ave., Toronto, Canada, as our representatives for Canada in the place of E. Grainger & Co., of the same city. Mr. Grainger's other business has taken up so much of his time that it was impossible to give the bee line the attention that he thought it deserved. Mr. C. E. Hopper, of the C. E. Hopper Co., is an enthusiastic beekeeper; and after having had a talk with Mr. Grainger he arranged to take over the Root line of goods under the firm name as above mentioned. Mr. Hopper has a partner who is backing him financially, and who will otherwise be able to help him materially in pushing the Root line of goods in Canada. The C. E. Hopper Co. will soon have a stock of Root goods; and while they will not carry a full line they will have all the standard goods such as are used so extensively in Canada.

The C. E. Hopper Co. are arranging to have demonstration meetings with power extracting outfits at one or two points this coming spring and summer.

The Root goods were never more popular than they are in Canada to-day, and we take pleasure in announcing that the new firm will be glad to get in touch, not only with the old Root customers, but new ones.

SECOND-HAND FOUNDATION MILLS.

We have to offer the following list of foundation machines which have been used, but are in fair condition. In many cases they will answer as well as a new machine where you have only a moderate output. Send for samples of any mill in the list which may interest you.

No. 0139, 2 1/2 x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.
No. 0140, 2 1/2 x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.
No. 0142, 2 1/2 x 6 hexagonal thin-super mill, in fair shape. Price \$10.00.
No. 0153, 2 1/2 x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.
No. 0154, 2 1/2 x 6 hexagonal thin-super mill, in very good condition. Price \$14.00.
No. 0156, 2 1/2 x 6 extra-thin-super mill, fair. Price \$10.00.
No. 0157, 2 1/2 x 6 thin-super mill in good condition. Price \$12.00.
No. 0160, 2 1/2 x 6 hexagonal thin-super mill, in good condition. Price \$12.00.
No. 0165, 2 1/2 x 6 hexagonal extra-thin-super mill in fair condition. Price \$11.00.
No. 0167, 2 1/2 x 6 hexagonal extra-thin-super mill in fair condition. Price \$11.00.
No. 0176, 2 1/2 x 6 extra-thin-super mill in fair condition. Price \$12.00.
No. 0180, 2 1/2 x 6 hexagonal thin-super mill, in fair condition. Price \$10.00.
No. 0183, 2 1/2 x 6 hexagonal thin-super mill, very good condition. Price \$14.00.
No. 0187, 2 x 10 round-cell medium-brood mill, old-style frame, in good condition. Price \$14.00.
No. 0188, 2 x 10 round-cell medium-brood mill, in good condition. Price \$14.00.

No. 0191, 2 x 10 round-cell Pelham mill in good condition for this kind of mill. The bases of the cells are not natural shape, but the walls are regular. Price \$7.00. Sample mailed free if interested.
No. 0182, 2 1/2 x 12 round-cell medium-brood mill in very good condition. Price \$20.00.
No. 0186, 2 1/2 x 10 hexagonal cell medium-brood mill in good condition. Price \$20.00.
No. 0206, 2 1/2 x 10 hexagonal cell heavy brood Dunham mill in good condition. Price \$15.00.

No. 0207, 2½ x 6 hexagonal cell thin-super Dunham mill in good condition. Price \$10.00.

No. 0210, 2 x 10 round-cell medium brood mill in extra-good condition. Price \$16.00.

No. 0211, 2½ x 10 hexagonal cell medium-brood mills; rolls recut, and practically as good as a new machine. Price \$28.00.

No. 0212, 2½ x 10 hexagonal medium-brood mill; rolls recut, and practically as good as a new mill. Price \$28.00.

Convention Notices

The Ohio State convention will be held here Feb. 12 and 13. Dr. Burton N. Gates, President of the National, will be here for three addresses. Other speakers of national reputation are expected to be present. Program of meeting will appear in next issue of GLEANINGS.

Athens, Ohio, Dec. 16. W. A. MATHENY.

The Western New York, Seneca County, and Ontario County beekeepers' societies will hold a joint meeting in Canandaigua, N. Y. (courthouse), on Jan. 13, 1914. An interesting program has been prepared.

F. GREUER, Sec. Ont. Co. B. K. Society,
E. F. CASE, Sec. W. N. Y. Society,
C. B. HOWARD, Sec. Seneca Co. Society.

The thirty-third annual convention of the Colorado State Beekeepers' Association will be held at the Auditorium Hotel, Denver, Col., January 20, 21, 1914. The annual reduced rates during the livestock show will make it possible for beekeepers to take advantage of the half-fare and also attend the stock show, which will be open all the week.

The program has not been entirely arranged for, but we are to have some exhibits of interest to all bee-men.

Boulder, Col., Dec. 17. WESLEY FOSTER, Sec.

The annual convention of the State Beekeepers' Association will be held at the Agricultural College, Jan. 30, 1914, under auspices Extension Division. Special rates over all Utah railroads. The following is the program:

10 A. M.—Enrollment, faculty room; call to order, room 126; President's address, E. B. Hawkins, American Fork; appointment of committees; report of secretary, H. C. Hennager, Salt Lake.

11 A. M.—Rearing and introducing queens, R. T. Rheeze, Ogden; Production and Sale of Honey, Wilford Belliston, Nephi.

2 P. M.—Foul-brood treatment, James Hacking, Vernal; Wintering—Summer stand, cellar, N. E. Miller, Logan; Middleman and Sale of Honey, A. G. Anderson, Beaver.

8 P. M.—Music, School of Music, U. A. C.; Life of the Honeybee (lantern slides), Dr. E. G. Titus, U. A. C.; Reports of committees and election of officers.

An exhibit of bees and beekeeping appliances will be open to the beekeepers and other visiting farmers and housewives in the College Museum.

IMPORTANT MEETINGS FOR BEEKEEPERS.

Farmers' round-up and housekeepers' conference, Jan. 26 to Feb. 7. State poultrymen's convention, Jan. 29-31. State poultry show, Jan. 26-31. State dry-farmers' convention, Jan. 31. State dairymen's convention, Feb. 2. Utah Development League, Jan.

The National Beekeepers' Association convention will be held in St. Louis, Feb. 17, 18, 19. The exact meeting-place, program, and entertainment will be announced in a subsequent issue. Concerning the program it may be announced that the foremost authorities in the country are being solicited for contributions, and it is assured that many of these will respond. The convention will be divided into sessions for business, and for the reading and discussion of apicultural subjects. At business sessions the delegates from the various affiliated associations throughout the country will prosecute the usual annual transactions. The general sessions for papers and discussions, it is hoped, will cover a series of special subjects, as, for instance, a short session on

bee diseases and their treatment; a session on the apicultural conditions of various localities of the country. It is hoped to have a discussion of wintering, the growing queen industry, and to make a feature of the demonstrations and discussion of new inventions and manipulations. It is, furthermore, hoped that at least some of the lectures may be illustrated with lantern slides.

Can you not attend this convention? The sessions are open to all interested in the promotion of bee-keeping. Keep close watch of the beekeeping press for subsequent announcements. The undersigned would be grateful for suggestions and inquiries. What can you contribute to the convention?

BURTON N. GATES, President.

Amherst, Mass., Dec. 23.

SPECIAL NOTICES

A. I. ROOT

On page 36 of this issue, in my reply to Mr. John Major, by a misprint I am made to say, "We buy oats every day," etc. It should read, "We bury oats every day," etc.

THE AJAX OXYGEN VITALIZER FOR INCUBATORS.

The manager of the Reliable Poultry Specialty Co., Alexander, N. Y., has furnished satisfactory evidence that their vitalizer (see p. 787, Nov. 1, and p. 18, ad. department, Sept. 15) is really a wonderful invention, and that I have done it injustice. I am exceedingly glad to know that I was mistaken, and stand ready to help herald it as one of the great inventions of the world; for if it saves "chicks," why may we not expect it to save humanity?

Literary Notes

Among the distinguished contributors to *The Youth's Companion* during 1914 will be Ex-President Taft, Oscar W. Underwood (Chairman of the Committee of Ways and Means), Judson Harmon, Mrs. Kate Douglas Wiggin, Mrs. Gene Stratton Porter (author of "The Harvester," etc.), Miss Mary N. Murfree ("Charles Egbert Craddock"), Jane Barlow, Mrs. Burton Harrison, Marion Harland, A. Lawrence Lowell (President of Harvard University), Nicholas Murray Butler (President of Columbia University), Arthur T. Hadley (President of Yale University), John Grier Hibben (President of Princeton University), A. W. Harris (President of Northwestern University), John G. Bowman (President of the State University of Iowa), George E. Vincent (President of the University of Minnesota), Bliss Perry (Professor of English Literature Harvard University), Rev. Dr. F. E. Clark (President of the United Society of Christian Endeavor), Sir Ernest Shackleton (the polar explorer), the Duke of Argyll, Gen. Frank McIntyre (Chief of the Bureau of Insular Affairs), Dr. Percival Lowell (Director of the Flagstaff Observatory), Sir William Ramsay (the great chemist), Sir John Murray (the oceanographer), E. Dana Durand (former Director of the Census), Hudson Maxim, John Foord (Secretary of the American Asiatic Association), and Prof. Hugo Munsterberg.

No one knows Ireland and the Irish better than Miss Jane Barlow, and in an article on "The Big Houses" she again proves her familiar charm and her ability to blend humor and pathos.

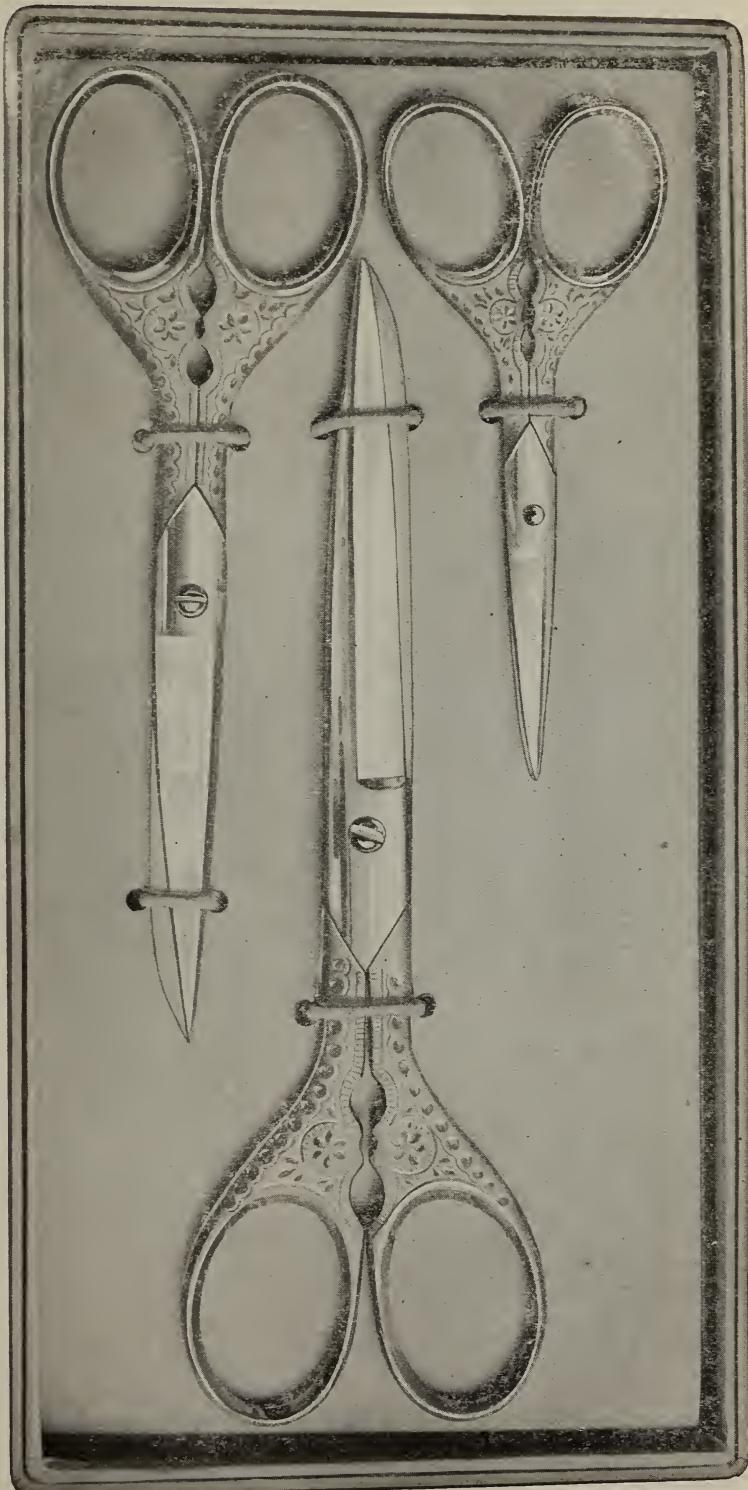
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MISCELLANEOUS HAND-BOOKS.

5 A C B of Carp Culture, by Geo. Finley..	25
7 A B C of Potato Culture, Terry. New edition, revised and enlarged; paper, 50c; cloth, 75c; mail, 85c.	

This is T. B. Terry's first and most masterly work. It has really made a revolution in potato-growing, and has been reprinted in several foreign languages. By getting the ground in proper condition to grow great crops of clover, and turning this under, Terry succeeded, not only in getting *more* potatoes, but even *better* ones, and in producing them at less expense also, than by any plan or system before the time he began his experiments in 1885. The book has already passed through three editions of many thousands. It not only includes potato-growing in the United States, but in Bermuda, the Island of Jersey, and other warmer parts of the world where "new potatoes" are raised for the express purpose of getting the high prices in the cities during January, February, and March. The book also gives special attention to the different and best methods for preserving and keeping *seed* potatoes in the very best condition to plant in all these different localities.

5 A B C of Strawberry Culture, by T. B. Terry. New edition, revised and enlarged; paper, 45c; cloth, 68c; by mail, 75c.	
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After Terry's potato-book had obtained such a kind reception from farmers, market-gardeners, and

others, he was induced to give his plan of growing strawberries, as he did potatoes, by plowing under great crops of clover, and, like the potato-book, his writings gave a new impetus to strawberry-growing; in fact, some of his pupils declare that, aside from the picking, they can grow strawberries almost as cheaply per bushel as potatoes. By following Terry's teachings, thousands of people have not only been able to give their families but the whole wide world better strawberries, and more of them, than they ever saw before.

6 Asparagus Culture.....	40
6 Alfalfa Culture.....	40

Barn Plans and Out-buildings.....	90
2 Celery for Profit, by T. Greiner.....	25

The first really full and complete book on celery culture, at a moderate price, that we have had. It is full of pictures, and the whole thing is made so plain that a schoolboy ought to be able to grow paying crops at once without any assistance except from the book.

10 Fruit Harvesting, Storing, Marketing, etc..	75
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It has been well said that it is an easier matter to grow stuff than to sell it at a proper price after it is grown; and many men fail, not because they are inexpert in getting a crop, but because they do not know how to sell their crops to the best advantage. This is the first book of the kind we have had as an aid in selling. It not only tells all about picking, sorting, and packing, but gives all the best methods for storing for one or two days or a longer time. It also tells about evaporating and canning when there is a glut in the market. It discusses fruit packages and commission dealers, and even takes in cold storage. It is a new book of 250 pages, full of illustrations. Publisher's price. \$1.00.

Farming with Green Manures, postpaid..	90
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This book was written several years ago; but since competent labor has got to be so expensive and hard to get many farmers are beginning to find they can turn under various green crops much cheaper than to buy stable manure and haul and spread it—cheaper, in fact, than they can buy fertilizers. This book mentions almost all plants used for plowing under, and gives the value compared with stable manure. Some of the claims seem extravagant, but we are at present getting goods crops and keeping up the fertility by a similar treatment, on our ten-acre farm.

7 Farm, Gardening and Seed-growing	90
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10 Fuller's Grape Culturist.....	1 15
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5 Garden and Farm Topics, Henderson.....	60
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12 Gardening for Pleasure, Henderson.....	1 10
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While "Gardening for Profit" is written with a view of making gardening *pay*, it touches a good deal on the pleasure part, and "Gardening for Pleasure" takes up this matter of beautifying your homes and improving your grounds, without the special point in view of making money out of it. I think most of you will need this if you get "Gardening for Profit." This work has 246 pages and 134 illustrations. (Retail price \$2.00.)

12 Gardening for Profit.....	1 10
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This is a late revision of Peter Henderson's celebrated work. Nothing that has ever before been put in print has done so much toward marking market-gardening a science and a fascinating industry. Peter Henderson stands at the head, without question, although we have many other books on these rural employments. If you can get but one book, let it be the above. It has 376 pages and 138 cuts. (Retail price \$2.00.)

8 Gardening for Young and Old, Harris.....	90
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This is Joseph Harris' best and happiest effort. Although it goes over the same ground occupied by Peter Henderson, it particularly emphasizes thorough cultivation of the soil in preparing your ground, and this matter of adapting it to young people as well as old is brought out in a most happy vein. If your children have any sort of fancy for gardening it will pay you to make them a present of this book. It has 187 pages and 46 engravings.

Postage	Price without Postage	Postage	Price without Postage
3 Grasses and Clovers, with Notes on Forage Plants	20	2 Experiments in Farming, by Waldo F. Brown	08
This is by Henry A. Dreer, author of the book "Vegetables under Glass" that has had such a large sale of late. This little book tells how six tons of grass has been grown to the acre, and gives much other valuable matter.		This little book ought to be worth its cost for what is said on each of the four different subjects; and the chapter on cement floors may be worth many dollars to anybody who has to use cement for floors, walks, or any thing else. In fact, if you follow the exceedingly plain directions you may save several dollars on one single job; and not only that, get a better cement floor than the average mason will make.	
10 Greenhouse Construction, by Prof. Taft...1 15		0 Our Farming, by T. B. Terry.....	75
This book is of recent publication, and is as full and complete in regard to the building of all glass structures as is the next book in regard to their management. Any one who builds even a small structure for plant-growing under glass will save the value of the book by reading it carefully.		Same, paper cover, postpaid.....	50
12 Greenhouse Management, by Prof. Taft...1 15		In which he tells "how we have made a run-down farm bring both profit and pleasure."	
This book is a companion to Greenhouse Construction. It is clear up to the times, contains 400 pages, and a great lot of beautiful half-tone engravings. A large part of it is devoted to growing vegetables under glass, especially Grand Rapids lettuce, as well as fruit and flowers. The publisher's price is \$1.50, but as we bought quite a lot of them we can make a special price as above.		If ordered by express or freight with other goods, 10c less.	
5 Gregory on Cabbages, paper.....	20	10 Talks on Manures.....	1 35
5 Gregory on Squashes, paper.....	20	By Joseph Harris. Written in conversational style, which makes it very interesting reading. It covers the subject very completely: contains numerous analyses of manures and comparative tables. The use of technical language is avoided, which makes the book of greatest value to the practical farmer. A book of 366 pages, nicely bound in cloth.	
5 Gregory on Onions, paper.....	20	10 The Dollar Hen.....	90
The above three books, by our friend Gregory, are all valuable. The book on squashes especially is good reading for almost anybody, whether they raise squashes or not. It strikes at the very foundation of success in almost any kind of business.		The above book will be clubbed with <i>GLEANINGS</i> for one year at \$1.50; or if you have already subscribed a year or more in advance you can have the book postpaid for 75 cents.	
Handbook for Lumbermen.....	05	My opinion is, that "The Dollar Hen" is not only one of the best books on poultry that we have at the present time, but it is worth nearly as much as a dozen other books. Perhaps this is extreme, but we have very few books that are strictly up-to-date, and still fewer that pitch right into the superstitions and humbugs now scattered all through our poultry books and journals.	
5 Home Pork-making; 125 pages, illustrated. 40		5 The New Rhubarb Culture.....	40
I think it will pay well for everybody who keeps a pig to have this book. It tells all about the care of the pig, with lots of pictures describing cheap pens, appliances, all about butchering, the latest and most approved short cuts; all about making the pickle, barreling the meat, fixing a smoke-house (from the cheapest barrel up to the most approved arrangement); all about pig-troughs; how to keep them clean with little labor; recipes for cooking pork in every imaginable way, etc. Publisher's price is 50 cents, ours as above.		Whenever apples are worth a dollar a bushel or more, winter-grown rhubarb should pay big. It does not require an expensive house nor costly appliances. Any sort of cellar where it will not freeze is all right for it; and the small amount of heat necessary to force the rhubarb costs very little. The book is nicely bound in cloth, full of illustrations, mostly photos from real work, 130 pages. Every market-gardener should have this book for the lessons taught directly in regard to forcing other crops besides rhubarb. Publisher's price 50c.	
15 How to Make the Garden Pay.....1 35		5 Tile Drainage, by W. I. Chamberlain.....	35
By T. Greiner. Those who are interested in hot-beds, cold-frames, cold green-houses, hothouses, or glass structures of any kind for the growth of plants, can not afford to be without the book. Publisher's price, \$2.00.		Fully illustrated, containing every thing of importance clear up to the present date.	
10 How to Keep Well and Live Long..... 90		The single chapter on digging ditches, with the illustrations given by Prof. Chamberlain, should alone make the book worth what it costs to every one who has occasion to lay ten rods or more of tile. There is so much science in digging as in doing almost any thing else; and by following the plan directed in the book, one man will often do as much as two men without this knowledge.	
The above book by T. B. Terry is, in my opinion, destined to relieve more pain, sickness, and death than any other book in the whole world that has ever come to my knowledge. This is pretty strong language, I admit; but since Mr. Terry commenced, years ago, to urge the importance of pure air, pure water, and a simple diet of good simple food in moderate quantities, the whole wide world, doctors included, seems to be gradually falling in with him. Of course, other good and wise men commenced a similar crusade for better health long before Terry did; but he seems to have a happy faculty of getting hold of people and keeping their attention. After you once start in with the book you will be pretty sure to read it to the end, and you will ever after be a better and a happier man or woman for having read it. We have a special low price for clubbing with <i>GLEANINGS</i> —that is, both for \$1.50. If you have already paid for <i>GLEANINGS</i> a year or more in advance you can have the book for 75 cents postpaid. Since it first came out, only a short time ago, we have sold nearly 1000 copies.		5 Tomato Culture.....	35
3 Maple Sugar and the Sugar-bush..... 25		In three parts. Part first.—By J. W. Day, of Crystal Springs, Miss., treats of tomato culture in the South with some remarks by A. I. Root adapting it to the North. Part second.—By D. Cummings, of Conneaut, O., treats of tomato culture especially for canning factories. Part third.—By A. I. Root, treats of plant-growing for market and high-pressure gardening in general.	
5 Manures; How to Make and How to Use Them; in paper covers..... 30		3 Winter Care of Horses and Cattle..... 25	
6 The same in cloth covers..... 65		This is friend Terry's second book in regard to arm matters; but it is so intimately connected with his potato-book that it reads almost like a sequel to it. If you have only a horse or a cow, I think it will pay you to invest in a book. It has 44 pages and 4 cuts.	
Nut Culturist, postpaid.....1 25		8 What to Do, and How to be Happy while Doing It..... 65	
3 Onions for Profit..... 40		The above book by A. I. Root is a compilation of papers published in <i>Gleanings in Bee Culture</i> , in 1886, '7, and '8. It is intended to solve the problem of finding occupation for those scattered over our and out of employment. The suggestions are principally about finding employment about your own homes. The book is mainly upon market-gardening, fruit-culture, poultry-raising, etc. Illustrated, 188 pages; cloth.	
Fully up to the times, and includes both the old onion culture and the new method. The book is fully illustrated, and written with all the enthusiasm; and even if one is not particularly interested in the business, almost any person who picks up Greiner's books will like to read them through.		8 Same, paper covers..... 40	
8 Practical Floriculture, Henderson.....1 10			
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